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COALITION LOGISTICS: A CASE STUDY IN OPERATION RESTORE HOPE

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

LAMONT WOODY, MAJ, USA

B.S., Southwestern Oklahoma University, 1980

M.Ed., Southwestern Oklahoma University, 1982

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Coalition Logistics: A Case Study in Operation Restore Hope

MAJ Lamont Woody, USA

U.S. Army Command and General Staff College
Attn: ATZL-SWD-GF
Ft. Leavenworth, KS 66027-6000

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America's heritage is rich in military participation in coalition operations. US Army logisticians provided support to coalition forces during Operation Restore Hope. This United Nations' sponsored mission occurred in Somalia from 5 December 1992 to 1 May 1993. Field Manual 100-5, Operations, the cornerstone of US Army doctrine, provided insight to operations other than war and coalition operations [considered *ad hoc*]. US Army logisticians provided support to the coalition forces within the framework of the tactical logistics functions, as described in FM 100-5. In each function [manning, arming, fixing, fueling, and sustaining] US Army logisticians provided coalition partners the support required. Logisticians provided health service support [medical logistics, evacuation, and preventive medicine], field service support [water purification, mortuary affairs, and laundry], and general supply support [Classes I-VII and IX, host nation support, Logistics Civil Augmentation Program, and Logistical Support Elements]. Virtually no logistical doctrine is available for coalition operations. Due to differences in standards among coalition partners, future operations must consider increased interoperability of equipment, personnel, and training. US Army logisticians achieved success in Somalia through innovative logistics techniques by leaders at all levels in USCENTCOM and in Joint Task Force Somalia, and not by any existing doctrine.

Logistics, Joint, Service Support, Coalition,
United Nations, Doctrine, Medical, Future Operations

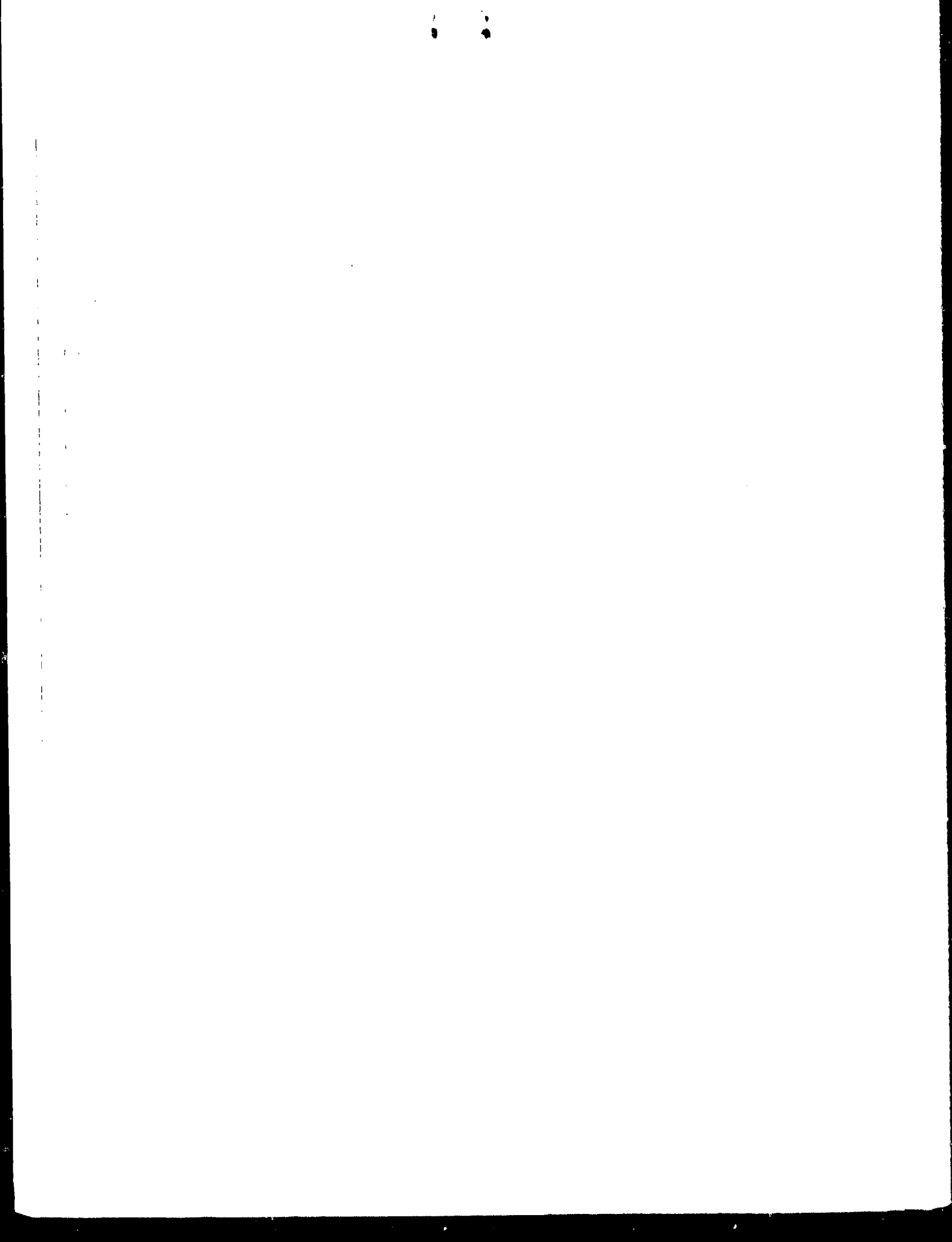
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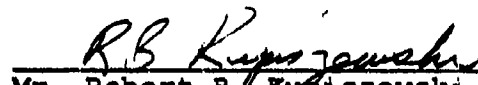
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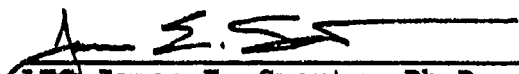
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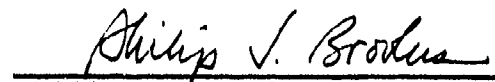
Approved by:

 , Thesis Committee Chairman
MAJ James E. Sisk, M.S.

 , Member
Mr. Robert B. Kupiszewski, Ed.S.

 , Member, Consulting Faculty
LTC James E. Swartz, Ph.D.

Accepted this 3rd day of June 1994 by:

 , Director, Graduate Degree
Philip J. Brookes, Ph.D. Programs

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

COALITION LOGISTICS: A CASE STUDY IN OPERATION RESTORE HOPE
by Major Lamont Woody, USA, 198 pages.

This thesis investigates US Army logistics support provided to coalition forces in Somalia using US Army Field Manual 100-5, Operations, as the standard.

This research examines the history of US involvement in coalition operations. It also analyzes the tactical logistics functions as applied to US Army logistics support to coalition forces during Operation Restore Hope. In each function, US Army logisticians provided coalition partners the support required. The author recorded and analyzed the specifics of each function.

FM 100-5 considers coalition operations as ad hoc missions. Virtually no logistical doctrine is available for coalition operations. This thesis concludes that the logistics support met minimum requirements. The US Army, however, achieved this through innovative logistics techniques by leaders at all levels in United States Central Command and in Joint Task Force Somalia and not by any existing doctrine.

Due to differences in standards among potential coalition partners, future operations must consider increased interoperability of equipment, personnel, and training. Coalition logistics must be continually refined to become a realistic part of US Army training and doctrine.

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Many great individuals assisted me in this research and in transforming my futuristic problem-solving ideas into a coherent, readable text. I would fail if I attempted to list every single person who provided interest, encouragement, and input to this topic of research.

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LIST OF ABBREVIATIONS

ADF	Australian Defense Force
AFSC	Armed Forces Staff College
AMC	Army Materiel Command
AMCCOM	Armament, Munitions, and Chemical Command
AOR	Area of Responsibility
ARCENT	Army Central Command
ARFOR	Army Forces
ASG	Area Support Group
ASP	Ammunition Supply Point
CFST	Coalition Forces Support Team
CTF	Combined Task Force
CGSOC	Command and General Staff Officers College
CINC	Commander in Chief
CINCCENT	Commander in Chief Central Command
CSB	Corps Support Battalion
CSS	Combat Service Support
DISCOM	Division Support Command
DLA	Defense Logistics Agency
DMMC	Division Materiel Management
DODAAC	Department of Defense Activity Address Code
FAO	Foreign Area Officer
FM	Field Manual
FMS	Foreign Military Sales
FORSCOM	Forces Command
HEMTT	Heavy, Expanded-Mobility Tactical Truck

HEMTT	Heavy, Expanded-Mobility Tactical Truck
HF	High Frequency
HMS	Her Majesty's Service
HNS	Host Nation Support
I MEF	First Marine Expeditionary Force
IMP	Individual Meal Packets
JCS	Joint Chiefs of Staff
JOPEB	Joint Operations Planning and Execution System
JTF SOMALIA	Joint Task Force Somalia
JTFSUPCOM	Joint Task Force Support Command
JULLS	Joint Universal Lessons Learned
LOGCAP	Logistics Civil Augmentation Program
LOGSTAT	Logistical Status Report
LSE	Logistical Support Element
MARFOR	Marine Forces
MCC	Movements Control Center
MCLL	Marine Corps Lessons Learned
MEDEVAC	Medical Evacuation
MOGAS	Motor Gas
MRE	Meals-Ready-To-Eat
MSR	Main Supply Route
MTMC	Military Transportation Movements Center
NATO	Northern Atlantic Treaty Organization
NCA	National Command Authority
NCR	Navy Construction Regiment
NGO	Nongovernmental Organizations
OOTW	Operations Other Than War
OPDS	Offshore Petroleum Distribution System
PEP	Personnel Exchange Program
PERSTAT	Personnel Status Report
POD	Port of Debarkation
POE	Port of Embarkation

ROWPU	Reverse Osmosis Water Purification Unit
SAIS	Standard Army Intermediate Level System
TDA	Table of Distribution and Allowances
TRADOC	Training and Doctrine Command
UNITAF	United Nations Task Force
UNOSOM	United Nations Operations in Somalia
UNPROFOR	United Nations Protection Force
UNSC	United Nations Security Council
USCENTCOM	United States Central Command

CHAPTER I

INTRODUCTION

Deploying to Somalia was like going to the moon: everything needed had to be brought in or built there. Every scrap of lumber, drop of fuel, and slice of bread had to be brought in from outside. From a logistics perspective, Somalia was a nightmare.¹

General Joseph P. Hoar, Joint Force Quarterly

The United States Army deployed to Somalia en masse in late 1992 and early 1993 to provide relief to a nation dying from starvation and civil unrest. The death toll, estimated by most civilian relief agencies, expected to reach 1 million by early 1993 if the world leaders did not quickly provide humanitarian relief. US Army soldiers rapidly deployed as a force projection Army from forts, camps, and airfields throughout the world to the famine ravaged country of Somalia. The soldiers deployed to Somalia within days of the US Marine Corps' arrival to Somalia's capital, Mogadishu, on 9 December 1992.

At the very outset of the operation, the US President's and the Secretary-General of the United Nations' (UN) game plan included a myriad of follow-on military forces from many different nations. This coalition of

military forces evolved to feed the starving nation and to protect relief workers and humanitarian supplies. This task required a maximum support effort by logisticians from every branch of military service, especially the US Army logisticians.

Upon arrival, an enormous amount of supply and service challenges faced the US and coalition force leaders. Multinational offers of humanitarian support provided Operation Restore Hope leaders an opportunity to link logistics from the international community to the mission. A critical element of coalition operations, as in all US Army missions, is the integration of international logistics systems into operational planning and execution.

Potential shortfalls of using this international logistics method are a result of some troop contributing nations suffering national logistics problems and reduced capabilities. The shortfalls of requesting that several nations contribute forces, while other nations provide logistics support in a single military operation, can be crucial to mission success. This is especially true if the logistics effort is not coordinated under one commander. If each coalition partner arrives with its own logistics commander, supplies, and services, redundancy of common items, such as water and fuel, will exist.

Multiple logistics support missions in a single theater of operations waste limited transportation and

storage assets, defeat the unity of effort principle, and multiply the costs of the operation. If one nation provides the logistics command and control, the design of the coalition support plan determines each nation's logistics requirements and forecasts logistics assets to accomplish the mission. The demands which faced US Army logistics leaders, force projected in support of a coalition operation in Somalia, must be examined. To assess these logistics challenges, this thesis explored the US Army's force projected logistics assistance to coalition partners during Operation Restore Hope.

As coalition forces arrived at Mogadishu, requests from various coalition partners for logistical assistance from the US military units occurred.² Most contingents arrived without the luxury of serving in an environment with long standing US, allied, or combined agreements. For many of the nations represented, this operation became the first time former enemies worked together to produce the same endstate. To ease this situation, US and coalition leaderships organized and modified many agreements as support requirements developed.

Only a few of the twenty-three nations assembled under the United Task Force Somalia (UNITAF) banner possessed an interoperability agreement or maintained an inventory of equipment governed by a multinational treaty. Many coalition partners arrived without agreements similar

to the US military interoperability alliances in Europe and South Korea. To further complicate leadership challenges, the UNITAF leaders did not have the benefit of six to eight months to organize and deploy the multinational forces into the theater. The urgency of the mission precluded taking time to train and sustain the force in the same manner afforded during Operation Desert Shield/Storm only two years earlier.

The mission requirement for the commander and his logisticians increased in quantity and difficulty as they determined logistics support requirements for each coalition partner. Contingents from each troop contributing nation arrived in various states of readiness. Some units arrived without equipment, tentage, or supplies; whereas larger nations arrived ready to conduct their mission and provide support to other nations. Shortfalls occurred even though the UN traditionally requests troop contributing countries bring organic equipment, e.g., communications gear, armored personnel carriers, personnel weapons, ammunition, and trucks.³ Many coalition partners generated a greater logistics support requirement than the capability they have to provide support.

The foremost logistical challenge in support of the coalition operation began as the US Marine forces arrived in theater, followed within days by the US Army combat service support (CSS) personnel. The missions of logisticians in

support of the operational forces required expertise located in Somalia, a rapid response on short-notice requirements, and maximum flexibility. The logisticians built a lodgment area for inbound US and coalition forces; and, as each contingent arrived, logisticians coordinated the theater onward movement arrangements for personnel, supplies, and equipment.

Once US and coalition units moved into their assigned area of operations, logistics sustainment of each contingent strained air and sea lines of communications. The critical life support supplies, such as food, water, and medicine, were pushed into the theater along with the transportation and fuel to move the forces. Besides receiving, moving, and sustaining the coalition force, senior logisticians simultaneously planned the redeployment of US forces from Somalia.

Background of the Study

This study examines the humanitarian operation in Somalia in the form of a case study. The idea of this topic unfolded as changes in the US Army's focus for commanders occurred. US Army commanders face new challenges in light of the US Army Chief of Staff, General Gordon R. Sullivan's focus of balancing the current capability base force concept with a new threat base force concept.⁴ The new concept changes the present US Army forward deployment structure

that stations large US troop forces on foreign soil. The new guidance relies on US Army contingency forces, stationed on US soil, deploying to defeat threats throughout the world as directed by the National Command Authority. This threat base force concept moves the US Army warfighting philosophy from a forward deployment base force to a forward projection base force.

With the movement towards a force projection concept, the logistics focus changes to include a wide range of supply and service requirements. Logistics efforts in the future will provide support to multinational forces in war and operations other than war (OOTW). It is probable that the National Command Authority will decide to deploy a logistic support command in support of an OOTW mission, instead of the combat forces normally deployed in support of national policy overseas. Various OOTW missions may be joint, combined, coalition, or interagency responses. Future responses will include counterdrug operations; humanitarian aid operations; and support to peacekeeping, peace enforcement, and peacemaking operations.

A critical element of coalition operations, as in all US Army missions, is the integration of international logistics systems into operational planning and execution. By integrating these systems into coalition operations, logisticians would access a larger support base when providing supplies and services. This method potentially

reduces individual nation's logistics burden by sharing or pooling resources of several nations.

The Research Question

How effective was logistics support to the coalition Operation Restore Hope from 5 December 1992 to 4 May 1993? This thesis uses the 1993 version of the US Army Field Manual (FM) 100-5, Operations, as the guideline to investigate the research question. This thesis evaluates the development of the US Army logistics system during the coalition mission of Operation Restore Hope. It focuses on the tactical logistics functions that US military units provided to countries under the United Nations banner.

To answer the research question, the most current US Army doctrine available, relating to coalition operations, was explored. The 1993 version of FM 100-5, which replaced the 1986 publication, includes a complete, new chapter on "Operations Other Than War."⁵ FM 100-5 defines coalition as "an ad hoc agreement between two or more nations for a common action."⁶ This thesis explains each tactical logistics function and describes its uses in planning and executing coalition operations in accordance with FM 100-5. FM 100-5 lists the tactical logistics functions as "manning, arming, fueling, fixing, moving the force, and sustaining soldiers and their systems."⁷ FM 100-5's definitions of coalition operations and tactical

logistics functions will constitute the criteria used to determine the success of logistics support to the coalition operation in Somalia.

This study researches the command and control structure that governed logistics support to the coalition forces throughout the operational continuum. US Army units provided logistics support to strategic, operational, and tactical phases of the operation. Strategic and operational joint service logistics planners ensured force sustainment, equipment, and personnel moved into Somalia. Strategic logisticians focused on determining supply support, acquisition, maritime prepositioned ships, reconstitution, mobility, and demobilization requirements.⁴ Strategic support began at the Pentagon and US Central Command which determined these logistics requirements, followed by assembling and transporting personnel and equipment into theater.

The operational logistician focused on theater reception of inbound strategic support, positioning facilities, materiel management, and movement control. Coalition soldiers and equipment moved by ship and aircraft into Mogadishu. Once off loaded, support continued with theater reception where personnel, supplies, and equipment were readied for theater onward movement and the humanitarian mission. Tactical logisticians focused on

arming, fueling, fixing, moving, and sustaining the US and coalition soldiers.

Recent Research

This study canvassed several recent research papers that indicate the expanding need to analyze basic aspects of coalition logistics and operations. Three research papers provided evidence that the military is in a changing environment. Each research paper recognizes coalition operations as an emerging way of life in global military operations.

While attending the NATO Defense College in Rome, Lieutenant Colonel Charles A. Seland, US Army, considered the issue of logistics training for multinational officers and non-commissioned officers to alleviate potential problems in coalition logistic environments.⁹ In his research paper titled "Evolution of Logistics: Supporting NATO's Multinational Corps," he determined an international logistics training school, sponsored by the United Nations, could ease numerous start-up problems in coalition operations.¹⁰ In Seland's interview with Colonel Wolfgang Kopp, chief of staff, German/Franco Brigade, Colonel Kopp stated that key members of the G4, Land Component Command, NATO Forces, should be knowledgeable of the logistics systems and equipment of other countries represented in the coalition.¹¹ Colonel Kopp points out the need for future

logistics officers to experience certain facets of multinational logistics systems. These logistics planners and leaders must be cognizant of all assets available to ensure the coalition commander has freedom of movement throughout the operation.

Possibilities for coalition logistics training and cross training of logistics staff officers include two options. Existing national staff and war colleges should exchange logistics officers to offer the opportunity for greater understanding of multinational logistics systems. Additionally, officers who were assigned in US Army Personnel Exchange Program (PEP) positions, worldwide, should serve a utilization tour in a headquarters responsible for that area of operations.

In addition to Lieutenant Colonel Seland's research, Colonel Kenneth H. Clow, US Army, recently completed a thorough review of the Logistics Civil Augmentation Program (LOGCAP) in support of various military operations, including Operation Restore Hope.¹² Colonel Clow surveyed the history and current status of the LOGCAP support to US military operations. His status report describes the necessity of using the LOGCAP in "actual contingency operation(s) by conventional forces."¹³ His report cites potential uses of civilian contractors to ease the logistics burden on military personnel in operations, such as the coalition mission in Somalia. His research provided

examples in which armed forces have depended on civilian contractors for wartime support. These wartime examples included:

1. Napoleon's reign in Europe and Russia,
2. various Civil War battles,
3. campaigns in World War I and World War II, and
4. the Vietnam War.¹⁴

The use of LOGCAP in future operations will be cost effective in terms of soldiers in the area of operations and money required for a coalition operation. US Army doctrine writers for coalition operations may need to consider the LOGCAP in future publications.

A research paper recently published by RAND Corporation surveyed coalition opportunities for future investigation and study. Wayne H. Gustafson and Richard J. Kaplan's "A Survey of Coalition Logistics Issues, Options, and Opportunities for Research," A RAND Note, appeared in August 1990.¹⁵ This research indicates a global trend toward coalition logistics in support of military operations. The change in philosophy is due in part to the economic, political, and military changes that force a sharing of resources to carry out United Nations peacekeeping operations.¹⁶

Given the three recent research documents, military operations in the future will be difficult and will contain many moving parts, such as national budgets, languages,

military resources of participating countries, and each area of operations infrastructure. Examining these moving parts assists in validating the need to foster research of logistics support to coalition operations.

The UN method of developing multinational force structures to solve short term problems is acceptable to most member countries of the UN General Assembly. The use of coalition forces for peacekeeping and humanitarian purposes are practical and potentially cost efficient. However, the cost of deploying total packages of personnel, supplies, and equipment from each participating nation is tremendous. Budget restraints throughout the world force national leaders to apply an economy of force principle that dictates a common sense burden-sharing philosophy.¹⁷ In a coalition operation, countries share common resources such as food, water, blood, transportation, lodgment, and storage areas to defray costs. In these ad hoc operations, one or more participating nations provide common resources to the other contingents and reimbursement takes place after the operation.

Cost is not the only major factor in planning and executing coalition operations. Determining whether military units with different languages, ethnic backgrounds, defense budgets, and military skills are capable of successfully achieving military objectives together is difficult until the troops actually arrive for the mission.

For many nations involved in the coalition, it was the first time their military forces conducted operations together. Without training or interoperability agreements, these forces encountered serious disadvantages from the beginning of the operation. Less fortunate coalition partners arrived to this peacekeeping effort without organic airlift, transport, communication, or technology. Their units arrived without the ability to sustain themselves for more than a couple of days. Some contingents arrived ready to be outfitted and sustained with food, uniforms, transportation, and medicine.¹⁸ Support to underdeveloped nations, who basically provided troops without equipment, required detailed logistics planning to ready these units for operational duty.

An example of a long-standing, successful military coalition is the North Atlantic Treaty Organization (NATO). NATO's strengths lie within each allied nation's willingness to contribute quality manpower and high-tech equipment. NATO's logistical thought process requires allied countries to deploy their own supplies, transport, and equipment for military operations. This logistics concept is considered a "national responsibility."¹⁹ NATO's general principles of logistics are provided in the North Atlantic Council Resolution of 23 February 1952:

The responsibility for logistic support to national component forces will, in general, remain with the responsible authorities of the nations concerned.²⁰

Regardless of the detailed NATO definition, the world military community views the meaning of this term in its strictest sense, which translates to each country transporting and sustaining its organic personnel and equipment. Most Third World nations do not maintain a logistical capability outside national boundaries. For these countries to provide assistance to NATO forces operating under the national responsibility definition, varying levels of logistical assistance must be handed over on or before arrival into the theater of operations.

The NATO concept of logistics also proves successful when seaports and airports are available. These ports must accommodate thousands of short tons of supplies and equipment over a brief period of time. This philosophy functions smoothly when each area of operation's infrastructure allows large convoys to move supplies, troops, and equipment rapidly. Its potential for success is higher when the area of operations is located in an industrially developed country, e.g., Germany, Netherlands, or France. Germany, for instance, manufactures its own 10-ton trucks, possesses its own combat rations, and maintains its own cargo transport aircraft.

As a host nation, Germany maintains an industrial base capable of transitioning support to coalition forces in a war or an OOTW in its backyard. On the other hand, problems occur when a country's infrastructure is dismal as

in areas similar to Somalia or Bosnia. The ability to transport and store each participating contingent's personnel, supplies and equipment becomes difficult. In bare-base environments, ad hoc missions require additional logistics planning and detailed execution to successfully meet the myriad of coalition requirements. To properly operate within an austere infrastructure, the NATO philosophy of logistics may require modifications in definition and application.

Background of US Coalition Operations

The US involvement in coalition operations, in one form or another, dates back to the days of the American Revolution during the 18th century. As wars moved into the 20th century, countries allied together to protect various strategic interests from enemy threat. Each American military commander focused campaign strategy to meet the multinational goal or end state. The allied or coalition agreement, arranged through the US President, stated US military commanders' end goal for each campaign. Challenges for each commander and staff differed in their attempt to integrate coalition forces into the US Army doctrinal system. In battle, successful logistics execution played a vital operational support role, providing the commander freedom of maneuver and timely sustainment.

Recent examples of the US military force involvement in coalition operations include Somalia, Bosnia, and Iraq. These missions, sponsored by the UN, required large amounts of logistic support to sustain the committed forces from around the globe. Several allies joined American forces enforcing a "no-fly" zone over designated areas of north and south Iraq. The US military provided the initial personnel and logistical assistance to this coalition effort. The sustainment effort in support of the Iraqi operation focused on fuel, repairs, and ammunition.

Near Bosnia, a battalion's worth of various skilled US Army personnel worked with the coalition peacekeeping observation effort in Macedonia. The title of this coalition mission is the United Nations Protection Force (UNPROFOR) and has a significant military strength of 24,434.²¹ US personnel have deployed from the Berlin Brigade as well as specialists from around the world. The commander of the 300+ soldier composite unit is a US Army lieutenant colonel. The US mission provides support for many coalition nations as part of the UNPROFOR peacekeeping effort. The US provides "the contingent to patrol the border between Bosnia and Macedonia to help prevent the civil war from spreading south."²²

In Somalia, thousands of soldiers from around the world gathered in support of Operation Restore Hope. The forces gathered under the United Nations in Somalia (UNOSOM)

banner. Over twenty countries contributed troops in response to the Secretary-General's plea to provide relief to the approximately 1.5 million famine-stricken people throughout Somalia. This peacekeeping effort is the nucleus of this investigation.

Besides present day coalition efforts, logistics planners played key roles in the late 1800s and early 1900s. These planners supported US military involvement in coalition operations during battles in the Far East, Middle East, and Europe. In 1898, the American forces defeated the Spanish military in Cuba and the Philippines. With the victory over Spain, American power expanded from the Caribbean to the Far East. To protect US and allied interests in 1900, 15,500 soldiers from the 9th Infantry Division under the command of Major General Adno Chaffee were force projected into the first coalition operation in China.²³ The journey to China lasted nineteen days. The US successfully joined forces, various supplies, and equipment with the Japanese, French, and Russians during the Boxer Rebellion of 1900.²⁴

Seventeen years later, in World War I, the US joined the coalition effort against the German military aggression in Europe. The US allies included Britain, France, and Italy. When the American Expeditionary Force (AEF) arrived, under command of General John J. Pershing, a critical shortage of US supplies and equipment existed. To bring the

complexities of coalition logistics under control, General Pershing directed the development of a Military Board of Allied Supply at the strategic level and a logistics "Coordinating Section" at the operational level within his staff.²⁵ The outgrowth of this coordinating staff is today's General Staff consisting of various staff elements G1-G7.

Within the coalition, senior logistics leaders dealt with soldier issues daily. On more than one occasion, bickering over the size of each nation's ration scale caused contention among the troops. The French and the Italian ration scales were half that of the British, and the Americans arrived in theater and demanded two times the British scale.²⁶ Sharing of resources throughout World War I proved far more extensive than rations. For example, the French provided General Pershing's men artillery pieces and ordnance. The US government procurement of French and British aircraft, flown by US pilots, proved successful during the Allied victory.²⁷ The essence of the support gained from US allies is summed up by Dr. James A. Huston:

During World War I the United States had to depend on her allies to provide that cushion, American forces using a large portion of British and French weapons, vehicles, and other equipment throughout that war.²⁸

During World War II, General Dwight D. Eisenhower aligned his allied forces, sharing basic supplies, supply routes, and medical treatment. General Eisenhower believed in the strength of a solid coalition military effort. After

the war's end, he referenced the multinational success in his Final Report to the Combined Chiefs of Staff saying:

The United States of America and Great Britain have worked, not merely as allies, but as one nation, pooling resources of men and material alike in this struggle against the forces of evil engendered by Hitler's Germany.²⁹

During the Korean War, General Douglas MacArthur aligned South Korean and American soldiers together. This coalition force held off communist aggressors along the 38th parallel. The result of the South Korean-American alliance is a Unified Command. This alliance provides training and logistics assets to both US and South Korean forces.

A drastic change in the US Army philosophy of coalition operations occurred as the Iron Curtain tumbled from power throughout Eastern Europe. The threat of attack from Warsaw Pact countries dissolved overnight. Several new, yet questionably stable nations evolved from the fragmentation of the now dissolved communist regime. The US and allied concern over the communist threat simply fell off planning boards. Based on the absence of a communist threat, and a growing economical deficit, the US Congress recommended drastic troop and base reductions. The Secretary of Defense and military leaders responded with plans to reduce forces in Europe. US Army logisticians assisted troops in preparing equipment for the exodus from western Europe. During the transition, Operation Desert

Shield leaders in Saudi Arabia required additional forces for the build up of multinational forces against the Iraqi invasion of Kuwait. The call fell upon US Army forces serving in Europe to transition deployment plans from the US to Saudi Arabia in support of the coalition operation.

This multinational environment of Operation Desert Shield/Desert Storm provided the military and its logisticians greater insight to what former US President George Bush referred to as the New World Order. To protect this New World Order environment, the President used various elements of national power.³⁰ Elements of national power included: diplomatic, economic, information, and military action to counter threats to global and national security. President Bush outlined the nation's strategic aims and listed potential global threats in his National Security Strategy.³¹ During Operation Desert Shield/Storm, President Bush used all four elements of national power to form a massive display of diplomacy, economic funding to nations providing military assistance [troops], and armed forces sea and air embargoes designed to deter the threat in the Middle East. President Bush requested international support to rid the world's third largest army from the borders of Kuwait.

The overwhelming multinational response to President Bush's request proved many diverse nations could support a mutual cause and defeat a common threat. In fact, most of

these nations provided more than lip-service. Coalition leaders joined the US by enforcing economic embargoes, supporting high level diplomatic meetings, and contributing troops for potential combat on Saudi Arabian and Kuwaiti soil. This New World Order brought many countries together, politically as well as militarily, in support of the UN Security Council (UNSC) strategic goals. After the war, nations of the world viewed the coalition's success as an acceptable method to win wars, thereby defeating potential and real global threats. Politicians will certainly look to military coalitions for support in future peacekeeping and warfighting endeavors.

At the end of Operation Desert Storm, US political and military leaders did not have much time to enjoy the campaign victory. Many parts of the world remained without any tangible stability. Drought, famine, terrorism, hurricanes, ethnic cleansing, and battles for the fragmented Soviet properties ignited the world. The US Government provides military personnel, including observers, to six UN operations and over six hundred personnel to the Multinational Forces and Observer mission on the Egypt -- Israel border. Many predict the number of requests for US military support to UN operations to increase as the world enters the 21st century.

As US leaders met to determine the appropriate amount of military support to provide international causes such as Somalia and Bosnia, the Secretary-General of the United Nations, Boutros Boutros-Ghali provided his recommendations for the UN's role in a world searching for peace.³² The Secretary-General reminded the UN General Assembly that the Cold War standoff in the UNSC was the primary deterrent to UN efficiency throughout the world. He suggested that a more effective UN is viable and essential in a vicious post-Cold War world. He made a request for a standing UN intervention force as an essential component to discontinue violence and safeguard basic human rights. To achieve these results, he suggested stronger nations work with the UN and weaker nations to provide equipment not readily available. This equipment would be furnished to troop contributing countries during UN missions requiring military assistance. In his report, Mr. Boutros-Ghali challenged stronger Governments to make certain equipment available to the UN as required by the Secretary-General. His remarks concerning this assistance follow:

Not all Governments can provide their battalions with the equipment they need for service abroad. While some equipment is provided by troop contributing countries, a great deal has to come from the United Nations, including equipment to fill gaps in under-equipped national units. The United Nations has no standing stock of such equipment. Orders must be placed with manufacturers, which creates a number of difficulties. A pre-positioned stock of basic peace-keeping equipment should be established, so that

at least some vehicles, communications equipment, generator, etc., would be immediately available at the start of an operation. Alternatively, Governments should commit themselves to keeping certain equipment, specified by the Secretary-General, on stand-by for immediate sale, loan or donation to the United Nations when required.³³

The Secretary-General's recommendations contained requests for equipment to support a future UN standing intervention force. Clearly, UN operations in the future require contributions from countries with critical resources such as military equipment and money. Future UN missions will involve multinational military forces. Weaker countries will require military assistance in the form of a sale, loan, or donation to adequately participate in UN missions.

With the US world class military and industrial base, it is most likely the UN will continue to call on a US President to provide a large portion of this support. Under US law, the UN Charter is binding as are resolutions of the UNSC; however, the UN cannot demand participation in a peace support operation. The US and forty-nine other countries initially signed the UN Charter on 26 June 1945 in San Francisco.³⁴ The UN Charter established the UNSC with the "primary responsibility for the maintenance of international peace and security."³⁵

To develop any standing military force structure under the direction of the Secretary-General requires

modification to the UN Charter. Also, the Secretary-General is required to gain more than a US President's guarantee for support to UN Charter changes. Under the 1945 UN Participation Act, any US Presidential decision involving the UN Charter is subject to Congressional approval. The US President maintains responsibility for the execution of any peace support mission involving US military personnel or equipment under the authority of the 1973 War Powers Act. The Secretary of Defense acts on the President's policy towards providing military support to the UNSC sanctioned missions.

Equipment support to UN peacekeeping missions, approved by the President, receives high priority throughout the military logistics community. When the President assists the UN logistically, several options exist. The Pentagon, under the direction of the Secretary of Defense, may authorize loans or sales of equipment through the Foreign Military Sales Program. The President may authorize equipment for loan or sale through one of the congressionally appropriated security assistance programs, e.g., Foreign Military Financing, Economic Support Fund, Peacekeeping Operations, Nonproliferation and Disarmament, and International Military Education and Training.

Along with major equipment purchases, requirements for additional support to one or more of these programs may

exist, for example, training and repair parts packages. In the initial stages of peacekeeping operations, no-notice logistical requirements flood the UN leaders. When the US commits equipment support to a UN member nation on short notice, the US Government periodically deploys military experts to provide equipment training in operational and maintenance procedures. From the soldier to the President, many military personnel are potentially affected by the decision to deploy equipment and personnel in support of UNSC strategy. The Secretary-General's intent of sharing world assets in turn for a peace dividend insures the next few years of peacekeeping activities will involve coalition forces.

Assumptions

This thesis assumes that logistics support to coalition operations will increase due to: the National Security Strategy focus, the escalating requirement for humanitarian relief efforts, and the growth of peacekeeping missions throughout the world.

Definitions

Coalition Action: Multinational action outside the bound of established alliances, usually for single occasions or longer cooperation in a narrow sector of common interest.
(Joint Pub 0-1)

Coalition Force: A force composed of military elements of nations which have formed a temporary alliance for some specific purpose. (AFSC Pub 1)

Combined Operation: An operation conducted by forces of two or more allied nations acting together for the accomplishment of a single mission. (FM 100-5)

Commander-in-Chief (CINC): Includes the following United States unified, specified, and functional CINCs: Space Command, Transportation Command, Special Operations Command, Europe Command, Southern Command, Specific Command, Atlantic Command, Forces Command, Central Command, and Pacific Command. (AFSC Pub 1)

Distribution System: That complex of facilities, installations, methods, and procedures designed to receive, store, maintain, distribute, and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units. (JCS Pub 1-02)

Doctrine: Fundamental principles by which the military forces or elements of it guide their actions in support of national objectives. It is authoritative but requires judgment in application. (JCS Pub 1-02)

Executive Order: Orders issued by the President by virtue of the authority vested in him by the Constitution of the United States or an act of Congress. (JCS Pub 3-05)

Host nation support: Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, times of crisis/emergencies, or war based upon agreements mutually concluded between nations. (JCS Pub 1-02)

International Logistics: The negotiating, planning, and implementation of support logistics arrangements between nations, their forces, and agencies. (adapted from Joint Pub 1)

International Logistics Support: The provision of military logistic support by one participating nation to one or more participating nations, either with or without reimbursement. (JCS Pub 1-02)

Interoperability: The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together. (Joint Pub 1-02)

Joint: Connotes activities, operations, organizations, etc., in which elements of more than one Service of the same nation participate. (Joint Pub 1-02)

Logistics Support: Support that encompasses the logistics services, materiel, and transportation required for the CONUS-based and worldwide deployed forces. (adapted from Joint Pub 5-03.1)

Military Strategy: The art and science of employing the armed forces of a nation to secure the objectives of national policy by the application of force, or threat of force. (Joint Pub 1-02)

National Security Strategy: The art and science of developing and using the political, economic, and informational powers of a nation, together with its armed forces, during peace and war, to secure national objectives. (JCS Pub 3-0)

Tactical Logistics Functions: Tactical logistics functions are manning, arming, fueling, fixing, moving the force, and sustaining soldiers and their systems. (FM 100-5)

Limitations

Time frame, location, and classification of the activities under investigation are the limitations to this study. Logistical support reviewed for this study is confined to Operations in Somalia from 5 December 1992 through 4 May 1993. The decision to produce an unclassified version of this paper restricts some aspects of logistical support in Somalia; however, this research provides the reader an overall view of support to coalition forces as they relate to the tactical logistics functions.

Delimitations

This thesis will restrict itself to the US Army logistics focus on coalition operations during Operation Restore Hope in Somalia. The investigation restricts itself again by analyzing logistics activities using the doctrinal tactical logistics functions described in the 1993 version of FM 100-5. To determine lessons learned and recommendations for future action or study, the study will not attempt to determine every detail of logistical activity in Somalia. Neither the allotted timeframe for completion or the classification of this document allows for such a thorough research.

Significance of the Study

The traditional American view of deploying to a war sustained by US-unique supplies is becoming outdated by the need for an international logistics support base. The "Old World Order" method of carrying out and supporting missions does not fit the New World Order. Logistics leaders face new requirements supporting multinational forces in ad hoc coalition environments. With the development of the 1993 FM 100-5, the US Army is focusing on development of power projection support and sustainment procedures of US forces to multinational operations including operations other than war.

Within each coalition operation, logisticians provide assistance in the planning and execution phases. Each US Commander-in-Chief (CINC), based on his geographical or functional responsibility, has unique requirements for his logistics area experts. This research seeks out better methods to provide support to CINCs commanding coalition missions in their area of operations. Whereas results of this investigation may not be a blueprint for all CINCs, it does provide explanation of an ad hoc mission in a worst case [bare base] environment.

The significance of this study will depend upon the background of each reader. A naval officer on a joint staff, an armor officer in a corps headquarters, a senior noncommissioned officer in the UN Logistics Cell in New York City, and an instructor at a Training and Doctrine Command (TRADOC) assignment will each find varying levels of significance as it applies to their present responsibility. International officers may find the support provided to or from their respective nation inadequate, and, in turn, adjust their logistics packages in support of future coalition operations.

An outcome of this study may be a listing of essential logistics requirements in support of a coalition operation. The results of this study may add substance to the training and education programs in the US Army logistics arena that teach various aspects of coalition operations.

Another useful outcome from this investigation may be in the recommendations of logistics topics for future study and analysis. With doctrine emerging in the area of OOTW, a possible significance of this study is its potential incorporation in US Army doctrine and future US/UN military operations under coalition conditions.

Conclusion and Transition

This chapter presented the thesis by describing the background of the research question, the significance of the study, and potential contributions to the field of study. The direction of the study has been laid out detailing key terms required for a basic understanding of the topic. The next chapter continues the investigation of existing literature beyond the recent research introduced in this chapter. The literature builds the framework for logistical support to coalition operations from a myriad of resources.

Endnotes

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¹⁰ Ibid., 57.

¹¹ Ibid., 54.

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¹⁴ Ibid., 3.

¹⁵ Wayne H. Gustafson and Richard J. Kaplan, "A Survey of Coalition Logistics Issues, Options, and Opportunities for Research," Rand Note (San Monica: Rand Corporation, 1990), 4.

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²⁰ NATO Logistics Handbook, Senior NATO Logisticians' Conference, (Brussels: NATO Headquarters, 1989), 23-26.

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²² Tom Byrne, "Washington Update: US Soldiers to Macedonia," Army 43, no. 8 (August 1993): 59.

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²⁷ Ibid., 45.

²⁸ James A. Huston, "Korea and Logistics," Military Review XXXVI, no. 11 (February 1957): 19.

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³¹ Ibid., 1-2.

³² Boutros Boutros-Ghali, United Nations Security Council Report S/24111: An Agenda for Peace: Preventive Diplomacy, Peacemaking and Peace-keeping, New York City, New York, 17 June 1992.

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CHAPTER II

REVIEW OF LITERATURE

The goal in the survey of literature is to move from the known to the unknown. The survey of literature began with a search of the most current primary sources of information. The search then moved to historical and other secondary sources of information dealing with multinational military operations.

The primary sources of information used during the investigation included personal interviews, official military documents from various lessons learned libraries, and current government and military publications. Telephone interviews proved helpful in forming an experience base for the study. Interviewees included logistics leaders from command and staff positions in Somalia. Two in depth interviews included: the Joint Task Force J-4, Colonel Sam E. Hatton, and Captain Peter Cantonese, Support Operations Officer, 68th Combat Support Battalion. Each officer provided critical information, insights, and points of contact for further interviews. Several officers attending Command and General Staff Officers' College, as well as faculty provided critical insight from their experiences during Operation Restore Hope.

Joint Lessons Learned System

Manuscripts from the Joint Universal Lessons Learned System (JULLS) added depth and insight to many coalition logistics areas of concern within this study. Dr. Scott W. Lackey, Chief, Research Branch, Combined Arms Center for History, collated the 10th Mountain Division's lessons learned library for Operation Restore Hope in 1993. Dr. Lackey received input from the 10th Mountain Division's General Staff throughout the operation. The Commanding General, Major General Stephen L. Arnold, thoroughly supported the documentation of his 10th Mountain Task Force's activities. Dr. Lackey's work is titled "Somalia Collection, Group Lessons Learned." This collection is available in the Combined Army Resource Library at Fort Leavenworth, Kansas. The input of several JULLS authors provided excellent ideas for positive changes in support of coalition operations. Many of these are detailed in Chapter IV.

Lessons learned from the US Marine Corps proved valuable in evaluating the handover of tactical logistics functions from US Marine forces Somalia (MARFOR) to Army Forces (ARFOR) in January 1993. The Marine Corps lessons learned (MCLL) library added insight to the development of an in-theater US Army coalition reception task force.¹ Missions for this type of unit included: theater indoctrination of coalition forces, evaluation of coalition

force equipment and personnel requirements, and transition coalition forces from deployment to employment. The MARFOR established the Coalition Forces Support Team (CFST). This team centralized the theater reception of coalition forces during Operation Restore Hope. The logistics responsibilities of the CFST included: providing: initial staging sites, water, rations, liaison teams, development of logistics support standard operating procedures, and on-going assessments of coalition partners logistics capabilities.²

US Army force projection operations in the future may involve coalition forces without US Marine Corps support. Future operations with coalition forces may require the US Army to develop a coalition support infrastructure similar to the MARFOR's CFST.

Military Publications

Current military publications proved invaluable in determining existing methods of conducting support activities to force projection, peacekeeping, and coalition operations. Most manuals alluded to these operations as being conducted on an ad hoc basis, which leads to obvious confusion of C2, priorities, and procedures. Key manuals include:

- (1) Joint Pub 4-0, Doctrine for Logistics Support of Joint Operations

- (2) Field Manual (FM) 100-5, Operations
- (3) FM 7-98, Operations in a Low-Intensity Conflict
- (4) FM 63-6, Combat Service Support in Low-Intensity Conflict

US Army Training and Doctrine Command (TRADOC) publications from combat and combat service support headquarters include:

- (1) Army Logistician
- (2) Quartermaster Professional Bulletin
- (3) Transportation Corps Professional Bulletin
- (4) Engineer Professional Bulletin

The Army Logistician published two related coalition logistics articles in its January-February 1994 issue. In the first article, "Logistics in Operations Other Than War," Major James E. Sisk describes military and governmental sources of information for the logistician preparing for OOTW, which includes most coalition operations.¹ In a second article, "Logistics for UN Peacekeeping Operations," Major Rodney A. Mallette describes the need for basic logistics principles of organization when operating in a multinational environment.⁴ The article addresses the primary problems logisticians face working in the UN Peacekeeping environment. According to Major Mallette the greatest hindrance "has been the lack of operating procedures and principles for providing logistics support for all phases of UN operations."⁵ Both articles provide

the logistician critical information and advice when preparing for and executing support operations to coalition forces.

The Military Review provided a wealth of multinational logistics background information in articles published in the early 1950s. In an article published in 1953, "Knowing Your Allies," Lieutenant Colonel Carl N. DeVaney classifies the Korean Conflict "as the greatest combined operation in the history of mankind."⁶ DeVaney writes that leaders at all levels must know their allied partners. He challenges them to take every opportunity to learn US doctrine as well as the "doctrine, customs, manner of expression, manner of living, and even the temperament and personalities of other allied nations."⁷ From language to measurements to technology, DeVaney argues for standardization to assist "nations acting together for the accomplishment of a single mission."⁸

Describing the logistics support during the conflict in Korea, Dr. Huston provided a significant contribution to the Military Review in 1957. "Korea and Logistics" highlighted areas now considered by FM 100-5 as the tactical logistics functions.⁹ Dr. Huston emphasized the burden of supporting UN forces as well as the host nation and US forces.

Service units were called upon for a much greater burden than otherwise would have been the case by reason of the logistics support furnished to other United Nations and Republic of Korea forces.¹⁰

Dr. Huston indicated that the most valuable lesson learned during the Korean conflict may be the experience gained by supporting the multinational UN forces. He provided this assessment of the likely outcome of working in the coalition:

Aside from the demonstration of solidarity for United Nations principles which the military contribution of the other nations indicated, probably the most important result of those was the international logistical cooperation which was likely to prove invaluable in any future collective police action or coalition war.

Later in 1957, Military Review published "Logistical Coordination Between Allied Forces," by Colonel Albert S. Britt, Jr. This article focused on the necessity and problems associated with sharing logistics in multinational operation. Many support problems occurred due to various contingent's economic structure. Colonel Britt detailed shared logistics support on both sides of World War I and II, as well as in South Korea and NATO. He concludes that many problems spring from the fact that "'have' nations of any coalition will be called on for logistical help by the 'have not' nations." Because the US Government provides so many foreign aid programs to Third World countries during peacetime, Colonel Britt predicts the dependency on the US for logistical support will sharply increase during a war or crisis. Britt believes this problem derives from "the fact that so many nations are in the 'have not' category."¹¹

This survey of literature reviewed US Congressional documents to determine Congress' political support to coalition and peacekeeping operations. An example of congressional support is provided in the following excerpt from the House of Representatives:

International peacekeeping activities contribute to the national interest of the United States in maintaining global stability and order the Secretary (General) may provide assistance for international peacekeeping activities during fiscal year 1993, in an amount not to exceed \$300,000,000 the Secretary of Defense may furnish assistance in support of international peacekeeping activities of the United Nations or any regional organization of which the United States is a member. Assistance may include funds, supplies, services, and equipment.¹²

The Marine Corps Gazette provided a reference to the US Marine Corps logistics support in Operation Restore Hope. The report appeared as a direct result of a directive from the Commander, First Force Service Support Group (First FSSG), US Marine Corps for his subordinate officers to provide "an article discussing the problems encountered and lessons learned during the Somalia experience."¹³ The Marine logistics officers submitted approximately fifty after action reports, of which the Marine Corps Gazette published over a dozen of these reports.

Early in December 1992, the First FSSG deployed to Somalia. The First FSSG provided direct service support to the 15th Special Operation Capable Marine Expeditionary Unit, who seized the beaches and parts of Mogadishu days earlier on 9 December 1992.¹⁴ The First FSSG off loaded the

Maritime Pre-positioned Ships (MPS), set up the seaport of debarkation and lodgment area, and assisted in receiving into the Somalia theater the first coalition forces, supplies, and equipment. This unit worked diligently to establish theater reception and onward movement of follow-on forces. It provided initial sustainment and survivability operations for the coalition forces entering Somalia. These papers provided a wealth of information, reference US and coalition operations from a logistics point of view. The complete documents, provided in response to the Commander, First FSSG's directive, are archived at the Marine Corps Historical Center in Quantico, Virginia.¹⁵

Logistics Books by James A. Huston

The historical sources of information included books written by Dr. James A. Huston. Huston's writings pertinent to this study included:

- (1) Outposts and Allies: US Logistics in the Cold War,
- (2) The Sinews of War: Army Logistics, 1775--1953,
and
- (3) Logistics of Liberty.

Each book detailed US Army success and failure over the past 200 years in terms of multinational partnerships and military agreements. Dr. Huston's writings covered various aspects of the American military logistics system

from the pre-American Revolution age through the nuclear age. He covered a range of US alliances beginning with the British support to George Washington's first expedition to Ohio in an attempt to remove the French military in 1753.¹⁶

In a turnabout 23 years later, Benjamin Franklin went to Paris in an attempt to acquire French logistics and operational assistance. Within months of Franklin's request, several French and other foreign officers joined Washington's American revolutionary fight to oust the British military from its former colony's soil.¹⁷ The American revolutionary war became a true coalition effort for freedom. Without multinational logistical assistance from Spain, France, and Prussia, the success of the revolution may have been delayed for months or even years.

During this time, Baron von Stueben, a former Prussian quartermaster, sailed to America. He developed training standards for Washington's Continental Army and assisted in restructuring its forces. He found many faults in the existing logistics system, partly because it resembled the British supply system Baron von Stueben believed to be totally inept.¹⁸

In 1781, a coalition force of 16,600 French and American soldiers marched against the British at Yorktown.¹⁹ The coalition force defeated the British Army commanded by General Cornwallis. Their success was due, in part, to Franklin's negotiations in Paris. Franklin secured

Napoleon's guarantee to send Comte de Rochambeau to support the American Revolution. Comte de Rochambeau joined the coalition against the British with 6,000 French troops in July 1781. In addition to Franklin's visit to Paris, Dr. Huston points out Washington's ability to plan the operation while coordinating multinational sustainment operations during the campaign contributed significantly to the coalition's success.²⁰

Periodicals

This survey discovered two leading publications, the Africa Report and the Africa Confidential, that report monthly African affairs in a non-biased, non-military way. The International Defense Review, International Relations, and International Affairs periodicals provided insight into coalition force activities in the Horn of Africa. Also, The New York Times provided international information including many coalition partners' perspectives of the successes and failures of Operation Restore Hope.

Conclusion

The review of literature in the logistics field of study is virtually limitless; however, in the sub-category of coalition operations, the topic is evolving and requires further study. Along the path of the logistics' historical continuum, several forgotten lessons learned emerged. These

lessons learned and the review of relevant literature provide the substance of the study. The next chapter describes the methodology of this research.

Endnotes

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⁴ Rodney A. Mallette, "Logistics for UN Peacekeeping Operations," Army Logistician (January-February 1994): 22-24.

⁵ Mallette, 22.

⁶ Carl N. DeVaney, "Know Your Allies," Military Review, XXXII, no. 12, (March 1953): 11.

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⁸ Ibid.

⁹ James A. Huston, "Korea and Logistics," Military Review, XXXVI, no. 11 (February 1957): 19-32.

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¹¹ Albert S. Britt, Jr., "Logistical Coordination Between Allied Forces," Military Review XXXVII, no. 6 (September, 1957): 49.

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¹³ Officers of the First Force Service Support Group (Forward), "Combat Service Support in Somalia", Marine Corps Gazette, 77, no. 11 (November 1993): 78.

¹⁴ Ibid.

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¹⁶ James A. Huston, Logistics of Liberty (Newark: University of Delaware Press, 1991), 24.

¹⁷ Ibid., 107-8.

¹⁸ Ibid., 64.

¹⁹ Ibid., 272.

²⁰ Ibid.

CHAPTER III

RESEARCH METHODOLOGY

This chapter delineates the methodology for the conduct, organization, and analysis used in this study.

Introduction

This study examined coalition logistics in Somalia from 5 December 1992 to 4 May 1993. This thesis was designed to determine: what the US Army did logistically for the coalition forces, why they did it, what might this mean for the future, and what should be included in future iterations of US Army and Joint Service publications. This is especially important since logistical support methods to other type of US Army operations are incorporated into doctrinal manuals which provide general guidance for logistics mission planning and execution.

Methodology

The researcher undertook this study to determine what happened logistically in Somalia and why. The basic method used to answer the research question included conducting a case study of tactical logistics functions as

used by logistics units during Operation Restore Hope, then analyzing the logistics characteristics of each function.

The study began with an examination of existing historical and modern literature relating to coalition operations. The study examined military history of allied, multinational, international, and coalition operations which proved extensive and helpful in determining lessons learned from the past. During the search of current literature, the 1993 version of FM 100-5, Operations provided US Army doctrine relating to coalition operations and operations other than war. FM 100-5 explained the US Army's change in its soldier deployment and soldier-stationing philosophy, including the new force projection concept as it relates directly to coalition operations. With this information, the scope of the investigation narrowed to the coalition operation in Somalia.

The next step in the methodology determined what method best articulated the difference between US Army doctrine for logistics support to coalition operations, and what logistics support was actually given to the coalition forces. To get to that step, the researcher analyzed each tactical logistics function used during the execution of support for the coalition operation. The tactical logistics functions, as listed in FM 100-5, provided structure to the myriad of combat service support tasks. Additionally, they represented a common sense approach which allowed for

efficient and effective employment of resources to armed forces involved in military or coalition operations. Interviews, lessons learned reports, and periodicals provided the data used to answer "What support did the US Army provide the coalition forces?"

Tactical Logistics Functions

The researcher divided the data into manageable subsections or categories. During the initial investigation of this topic, events and activities fell into meaningful clusters. The clusters for this research became the tactical logistics functions as they were implemented by US logisticians in support of coalition forces in Somalia. Coalition forces performed various facets of the tactical logistics functions, but did not know the specifics of each function.

The researcher categorized the logistics functional areas that the US Army provided in support of the coalition partners. This allows the future reader to focus on areas of particular interest, lesson learned, or on recommendations for further study. The tactical logistics functions are summarized below from Chapter 12 of FM 100-5:

Manning. The systems of personnel readiness management, replacement management, and casualty management meet the Army personnel requirements for mobilization and deployment through redeployment and demobilization.

Arming. Arming the force is intensive and time-sensitive. Logistics provides the total package of components, technical maintenance, and skilled soldiers to keep weapons systems firing.

Fueling. Fueling the force encompasses provision of bulk and packaged petroleum, oils, and lubricants for equipment including high performance air and ground vehicles which provides great potential mobility for both heavy and light forces. Providing clear priorities for fueling, accurately estimating fuel consumption, and economizing assets whenever possible contribute to adequate support of operations. Whether combat, combat support, or combat service support all units require uninterrupted fueling to function effectively.

Fixing. Maximizing equipment availability is a necessity in supporting a force-projection army. A tailored maintenance capability will deploy, move with, and redeploy with support units. Battle damage assessment and repair provides the capability to quickly repair and return equipment to combat or expedite recovery and evacuation to the closest maintenance facility with required capabilities.

Moving. Soldiers, equipment, and supplies must move rapidly and in sufficient quantities to support combat operations. The complicating effects of terrain, weather, and enemy interdiction demand well-planned engineer support

and great flexibility of transportation planner and operators.

Sustaining soldiers and their systems. This critical logistical area includes personnel service support, health service support, field service support, quality of life and general supply support.

Case Study Procedures

The case study chapter provided an overview of the logistics organizations and an evaluation of specific examples from military members who served in Somalia. The logistical aspects of coalitions operations used in the case study (analysis) provides a series of events along with a record of military activity in Somalia. To build these logistics areas, the investigation continued the dialog with logistics leaders returning from Somalia, with CGSC faculty and students recently returned from the mission, and with logistics personnel in Somalia, as required.

The interview process searched out background experiences to substantiate support provided to various coalition partners. Twenty-five interviews furnished the investigation enough key information to analyze how the US Army supported the coalition forces. Interviews cast a light on what events led to US Army providing this support. Questions used to determine recording in this study included: "What was the author or the individual being

interviewed attempting to say?, What thought was the author trying to convey?, What inferences or interpretations could be extracted from the words?" The basics of this evaluation of evidence was simply, what do the words mean? The investigation reviewed the US military's development of its command and control for the operations. This study queried each coalition partner's logistics requirements, once they arrived in Somalia, and determined how the US Army logisticians provided support.

Conclusion and Transition

Chapter III provided the methodology for the analysis of the research question. After providing the background and significance of the study in Chapters I and II, this chapter articulated the basic process for assembling information, defining the tactical logistics functions, and the basis of the case study.

The foundation of Chapter IV is to gather and organize material to develop an analysis of the US Army logistics assistance to the coalition forces in Somalia. Chapter IV examines the Somalia area of operations in the form of a country background. Then a description of the US and coalition command and control, to include the Joint Task Force J-4 is included. Finally, each tactical logistics functions is described in detail using interviews and the review of literature from Chapter II.

A summary and conclusion of this analysis is included in Kismaayo V, with lessons learned and recommendations for future operations, training, and study. It provides logistics aspects for possible change, analysis, or incorporation in US Army doctrine and future US/Allied military operations under coalition conditions. The evidence of this study may assist in determining requirements for future training, planning, and execution of logistics support to coalition operations. Kismaayo V is not intended to be a cookbook or template for coalition logistics, rather it is designed to become additional tools for the logisticians toolbox.

The chapter breakdown for this thesis includes:

Chapter I: Introduction to the Study

Chapter II: Review of Literature

Chapter III: Research Methodology

Chapter IV: Case Study and Analysis

Chapter V: Discussion, Conclusion, and
Recommendations

CHAPTER IV

CASE STUDY AND ANALYSIS

Country Background

Today, Somalia is a country deprived of any infrastructure or national government. Its official title is the Republic of Somalia. Formed on 1 July 1960, the Republic merged southern Italian Somaliland and northern British Somaliland together.¹ Somalia is located on the Horn of Africa, the easternmost projection of the African continent. This area resembles a rhinoceros horn (see figure 1). This area was once called Regio Aromatica because of exquisite spices grown in the region. In ancient Egypt the writer Herodotus referred to this area as the Land of Punt.

The 1993 estimated population of Somalia is 8,050,000 ranking it eighty-third in the world. The state religion is Islam. Most Somalis practice the Islam faith as Sunni Muslims. The official language is Somalia but English, Italian, and Arabic are also used. The illiteracy rate suffers at seventy-six percent (76%). The ethnic composition of the country is 85% Somali. The remainder of Somalia's ethnic composition is mixed among Bantu (1,173,700), Arab (30,000), European (3,000), and Asians

(800). A Somali's life expectancy is projected at 47.1 years of age for the period 1990-1995.²

Somalia's land mass extends from the equator in the south to the Red Sea in the north. Its 1,707 mile (2,750 km) coastline is linked in the North with the Gulf of Aden and the Indian Ocean in the East. Its land borders measure 1,454 miles (2340 km) and include Djibouti and Ethiopia in the West, and the country of Kenya in the Southwest.³ Somalia's total land area is 246,300 square miles (638,000 square km), about the size of Texas.⁴

At the center of this austere country is Mogadishu, the capital. It is Somalia's main seaport and commercial center. Mogadishu is also the largest city with an estimated population of 700,000 in 1991. Information flow in Somalia is limited. The nation manages two AM radio stations, a single television station, and one major daily newspaper. Only one Somali in 1,000 owns an operating telephone set;⁵ however, no telephone lines or system existed to provide service in Somalia, when American soldiers arrived.⁶

Somalia's transportation capabilities are archaic. Since Somalia has no railways, internal transportation consists of buses, trucks, carts and donkeys. Outside Mogadishu, the country's infrastructure is wrought with roads and bridges washed out over years of governmental neglect, harsh weather, and civil war. The road structure

is meager, containing a network of approximately 9,455 miles (15,215 km) roads of which only 1,451 miles (2,335 km) are paved.⁷ Most Somali's travel secondary and rural trails into the nearest of scattered Somali market cities.

Geographical distances of the cities from one another adds to any transportation dilemma. Somalia's only two international airports are located in Bardera and Mogadishu. Both have limited capabilities in terms of tarmac space and quality. Smaller airfields scattered about the country-side require extensive repairs. Besides Mogadishu's seaport, two other operational seaports exist at Kismaayo, and Bardera.⁸

Somalia's generally hot climate varies from temperatures of 82°F (28°C) to 100°F (38°C).⁹ A temperature difference of 17°F exists from the Djibouti border in the North to the most southern border of Somalia. Western and southern borders usually receive the bulk of Somalia's precipitation; however, droughts are a normal occurrence. The country suffers from frequent dust storms, seasonal monsoon winds, deforestation, overgrazing, soil erosion, droughts, and desertification.¹⁰ Offshore high sea states occur frequently, forcing ships bound for Somali seaports to dock in Kenya. Among Somalia's numerous exports conducive to this arid environment, bananas, fish, hides, and skins rate the highest gross income.

Somalia's natural vegetation includes: scattered small trees, low bushes, and patches of dry savannah grasses. Only about one-half of the land is suitable as pasture for raising livestock. Somalia's wildlife includes: elephants, foxes, snakes, zebras, leopards, hyenas, giraffes, and antelopes.¹¹

Somalia's meager economy virtually depends on exports of livestock and agriculture. Land available for agriculture makes up only about 2 percent of Somalia's total landmass. Somali's farm bananas, the main commercial and export crop, by irrigating lands along the Juba and Wabi Shebelle rivers (see figure 2). Other crops include sugarcane, cotton, corn, sesame, sorghum, and fruits.

Few hospitals operate outside of Mogadishu. Most are substandard and filthy. The standards of care are far less than those of Western civilization. No license is required to practice medicine in Somalia. The few hospitals that exist are understaffed, operating without training programs or medical schools. The infection rate is high, as is the post-operation death rate. The country lacks medications, antibiotics, and medical supplies. According to the Joint Special Operations Command Surgeon, Lieutenant (Doctor) Philip Volpe, "Hospitals [in Somalia] were a place to go to die, not to be cured!"

The Commander in Chief, United States Central Command, MacDill Air Force Base, Florida, General Joseph P.

Hoar, summarized this austere environment that the forces apportioned to General Hoar encountered upon arrival:

Somalia had primitive airfields, barely usable seaport, disintegrating road networks that did not line population centers, and roadways rendered impassable by fallen bridges and washouts. There was no electricity, no water, no food, no government, and no economy.¹²

The Mission

Many conflicts occurred throughout the crisis-ridden country of Somalia in 1992. The situation encompassed a fall of an established government, a full-scale outbreak of famine, a devastating drought, and an unfortunate, but bloody, civil war among various clans and sub-clans. This great tragedy cause thousands of innocent people to die of starvation and disease. Relief agencies throughout the world flocked to the famine and war stricken country. These nongovernmental organizations (NGO) soon found themselves part of Somalia's internal conflicts.

Clansmen attacked many relief workers, demanding money or favoritism in the rationing of food aid and jobs. Clansmen often stole relief support aid, such as food and medicine before it departed the airport or seaport storage areas in Mogadishu. Key UN relief agencies were operating in Somalia including: United Nations Humanitarian Center for Relief, World Health Organization, Food and Agriculture Organization, World Food Program, and United Nations Children's Fund. A cry for humanitarian relief for the 1.5

million famine stricken Somalis raced throughout international newspapers, televisions, and politics. International pressure upon national leaders and their representatives to the United Nations escalated.

As the world's discomfort grew, the UN Security Council (UNSC) along with the UN General Assembly voted unanimously to authorize emergency airlift of humanitarian relief to Somalia on 27 July 1992.¹³ On 14 August 1992, President George Bush ordered a series of airlift operations, transporting food to the starving millions in Somalia.¹⁴ The US Air Force began the movement of food supplies into Somalia within days under the title of Operation Provide Relief. By the end of the operation the United States Air Force cargo aircraft delivered over 28,000 metric tons of supplies or 112 million meals.¹⁵ The logistics effort put food into Somalia's airfields but the NGOs could not always reach the famine stricken areas due to a lack of security caused by bandits, ambushes, and other criminal activity.

As the situation deteriorated beyond control, the UN mandated a deployment of troops to provide security and safety of humanitarian efforts to Somalia. This course of action developed during the 28 August 1992 UNSC meeting and became Resolution 775.¹⁶ On 25 November 1992, the US National Command Authority (NCA) offered military troops and leadership for Somalia humanitarian endeavor.¹⁷ The 15

members of the UNSC unanimously authorized the deployment of a United States-led military force to enter Somalia under the direction of Resolution 794 on 3 December 1992.¹⁸ The UNSC designed the mission to clear the way for food deliveries to the needy nation. Within 24 hours the President of the United States spoke on American television explaining the objectives of the military action to the American people. In his speech, President Bush described his rationale for sending American troops to Somalia:

We will create a secure environment in the hardest hit parts of Somalia so that food can move from ships over land to the people in the countryside now devastated by starvation. Once we have created that secure environment, we will withdraw our troops, handing the security mission back to a regular UN Peacekeeping force.¹⁹

Establishing Command and Control

Before President Bush presented the Somalia speech to the American people, the National Command Authorities assigned the UN military task to the US Central Command (USCENTCOM) from MacDill Air Force Base, Florida. The National Command Authorities apportioned forces to the Commander-in-Chief, USCENTCOM (CINCCENT) who formed an operational peacekeeping and humanitarian Joint Task Force SOMALIA (JTF SOMALIA). General Hoar selected the Commanding General, First Marine Expeditionary Force (I MEF), the USCENTCOM Marine Component, Camp Pendleton, California as the JTF SOMALIA commander on 2 December 1992.²⁰ The

allocated forces were to consist of US Army, Navy, Marine, Air Force, and special operations forces, as well as contingents provided by troop contributing nations.

Assigned as the Commander, JTF SOMALIA, General Robert B. Johnston selected Major General Charles E. Wilhelm to command US Marine Corps Component (MARFOR) in Somalia (see figure 3). The operation received the title "Restore Hope." The establishment of JTF SOMALIA provided the command and control required to implement the US-led UN mission. The mission statement developed by USCENTCOM read as follows:

When directed by the [National Command Authority], CINCCENT will conduct joint and combined military operations in Somalia, to secure the major air and sea ports, key installations and food distribution points, to provide open and free passage of relief supplies, to provide security for convoys and relief organization operations and assist UN/NGOs in providing humanitarian relief under UN auspices.²¹

Implied missions of the Operation Restore Hope plan included the US military responsibility to support UN forces and "to protect Somalia's relief supplies from predatory gunman."²² It also required the US and coalition forces to open supply routes, create distribution networks, and assist in other humanitarian relief efforts. Support to the first US military units occurred as the US Marines arrived in Mogadishu on 9 December 1992, followed by US Army units who began arriving in Somalia on 13 December 1992. Within days support to the coalition forces in theater commenced.

Logistics Command and Control

General Johnston organized the overall military operation and support for the peacekeeping mission in the Somalia theater of operations. His staff formed the basis of the JTF SOMALIA Headquarters. General Johnston requested a US Army logistician to fill the joint service J-4 billet due to the projection of many US Army personnel deploying to Somalia. A handover of logistics responsibilities from the MARFOR to the US Army Component (ARFOR) occurred early in the operation.²³ The JTF SOMALIA J-4 would coordinate all logistics functions in Somalia.²⁴

On 1 December 1992, Colonel Sam E. Hatton, Deputy Commander, 13th Corps Support Command, Fort Hood, Texas, received a warning order from the III Corps' Chief of Staff that the CINC, Forces Command (CINCFORSCOM) was considering him for the JTF SOMALIA J-4 assignment. The next day, Colonel Hatton coordinated with six senior level logisticians who worked throughout the US Army, including the Pentagon and Army Materiel Command (AMC). Within twenty-four hours of the warning order, the CINCFORSCOM selected Colonel Hatton for the J-4 position. As he packed for the flight to Camp Pendleton on 4 December 1992, he developed a Top Ten List to contend with the tough problems ahead.

Upon arrival at Camp Pendleton, Colonel Hatton met the members of the JTF SOMALIA J-4 logistics staff met for

the first time (see figure 4). The meeting focused on reviewing the operations plan, conducting a logistics estimate of the situation, and preparing a briefing for the First MEF and JTF SOMALIA Deputy Commanding General W. B. Moore. Colonel Hatton's staff reviewed the plan, analyzed the latest intelligence, and scanned the logistics lessons learned from Operation Desert Shield/Desert Storm. He and his staff examined the basic mission, equipment, troops, terrain, and time (METT-T) as they related to the basic operations plan. In short, they developed a Top Ten List to contend with the tough problems up front. The staff determined logistically what was doable, simple, and workable in the short- and long-term.²⁵

Colonel Hatton's logistical estimate of the situation indicated several things needed to occur. First, the common logistics support American forces would provide coalition forces and sister services, needed clarification. The initial list, determined by his staff, included water, fuel, and rations. This list required further study, as it might expand as requirements from coalition forces were specified. Second, a theater level logistics management plan had to be developed. JTF SOMALIA needed a bridge to link strategic logistics to operational logistics within the theater of operations. A requirement existed for a theater Support Command, similar to Lieutenant General William G. Pagonis' 22nd Support Command established early during

Operation Desert Shield, orchestrate theater priorities established by the JTF commander.²⁶

Under the UN Charter's Terms of Reference, a document signed by the US Department of Defense and agreed to by the US Department of State, authorizes the US military to provide certain supplies and services to the coalition forces. The end product, logistically, is a tasking to the US military to provide bulk water, bulk fuel, and field rations, as well as responsibility to receive, store, and issue bottled water to coalition forces in Somalia. The UN logistics system, based wholly on procurement, has no standing logistical force to stock supplies and equipment for future operations.

General Hear, CINCCENT, provided his C141 for the staff's flight to receive the latest updates from the USCENTCOM staff at MacDill Air Force Base. Colonel Hatton and his staff briefed the Joint Logistics Operation Center staff, established by the USCENTCOM Logistics Directorate (CCJ4) for Operation Restore Hope.²⁷ The J-4 staff received an updated intelligence briefing from the USCENTCOM staff and analyzed the condition of the infrastructure for logistics activity. During the briefing, Colonel Hatton presented a layout of the logistics plan. Due to size of the projected force structure, the JTF J-4 recommended a Logistics Support Command for the JTF SOMALIA. USCENTCOM

validated the requirement and authorized the development of a Joint Task Force Support Command (JTFSUPCOM).²⁸

After an in-flight refueling of the CINC's C141, the J-4 staff landed in Mogadishu. Following a series of briefings, Colonel Hatton canvassed the city with a US Army officer, Major J. R. Mott, liaison team, 10th Mountain Division (Light Infantry) from Fort Drum, New York. Major had first hand knowledge of the fixed facilities, city infrastructure, and outlying terrain. Major Mott's recent assignment as a member of the US Ambassador's Country Team to Somalia provided the JTF J-4 a wealth of information and possibilities.²⁹ Colonel Hatton also conducted a logistical area terrain analysis of the area by plane. He found that the Somalis took anything not tied down. Somalis vandalized building after building, which showed signs of being bullet ridden. There were no public utilities. The remains of the US Embassy included cinder block, bare walls, and rubble. After the Embassy personnel departed Somalia in 1992, Somalis stripped away furniture, duck work, window fixtures, copper wires, and tiles. Somalis went to the trouble of chipping the marble flooring out of the entry-way. Throughout Mogadishu, Colonel Hatton found most buildings in this appalling condition. Rumors in the city stated that the Somalis heard that foreigners left gold in various facilities.³⁰

The next step included the J-4 daily logistical coordination meetings with the First MEF G-4, 10th Mountain Division Support Command (DISCOM) Commander, a senior US Air Force logistics officer, and the 593rd Area Support Group (ASG) Commander. This logistics group reviewed the planned air and sea flow of personnel, supplies, and equipment for the following day. They used a flow meter early in the process to analyze as many scheduled events from inbound troops and equipment to support to troops already established in other cities. These leaders shared their logistical and manpower assets towards meeting the multinational flow of inbound troops and equipment. The J-4 ensured the meetings focused on METT-T daily, which meant the logistical leaders adjusted, planned, and executed in the changing environment on a daily and sometimes hourly basis.¹

As the troop movements into Somalia increased, the need to expand the theater logistics base grew. Coalition forces arrived, often unscheduled, forcing reevaluation and adjustments of logistics support plans to meet the most current priorities. The JTF force structure remained in a constant change throughout the operation. To properly balance service support assets, the J-4 staff developed a Logistical Status Report (LOGSTAT) which listed potential and existing support requirements for each US and coalition unit, as well as on going events.

The LOGSTAT described the troop strength, logistics capabilities, and support required. Besides the LOGSTAT, the J-4 staff built a logistics synchronization matrix to determine logistics support requirements. The information updates occurred daily, sometimes hourly. Another important matrix for the J-4, included a listing by the type of support agreement each coalition nation maintained which authorized supply and service support from the JTF SOMALIA J-4 (see figure 5). These matrixes got everyone involved, from the JTF staff members to the US and coalition commanders. They provided an excellent tool for constant assessment of the logistical situation and provided real time input for setting JTF SOMALIA logistics priorities.

The J-4 reviewed the daily LOGSTAT and personally briefed each arriving contingent commander on the logistics support readily obtainable. Immediately available support included water, fuel, and combat rations. Each contingent simply needed to bring their transport vehicles to pick up supplies. In the case of contingents arriving without transport, supplies were transported to the requesting units.

The JTF SOMALIA Order initially "gave all the responsibility for command and control of Army forces to the [US] Army Forces Headquarters."³² The ARFOR commander, Major General Stephen L. Arnold, commanded the 10,325 soldiers assigned to Task Force (TF) Mountain. The ARFOR staff

consisted of officers and senior noncommissioned officers from the 10th Mountain Division (Light Infantry). MG Arnold doubled as ARFOR commander and Commanding General, 10th Mountain Division. The 10th Mountain DISCOM provided logistics support for the ARFOR including the 10th Division, its Mountain Task Force, and Australian and Belgium forces. Besides the US soldiers assigned to ARFOR, the 10th Mountain Division assistant division commander for Operations, Brigadier General Lawson Magruder led a coalition element of the Combine Task Force (CTF) Kismaayo. According to the 10th DISCOM Deputy Commander George E. Thayer, III:

The CTF consisted of [soldiers from] 3rd (US) Brigade, 14th Infantry Regiment; 1st (Belgium) Paratrooper Battalion (reinforced); a USMC Communications platoon; and, numerous ad hoc US elements called Team Bandit and a 23 soldier combat service support (CSS) element from the 210th forward support battalion (with water, transportation, and maintenance augmentation from the 710th Main Support Battalion) called CSS Team Alpha.³³

The 2nd Brigade commander, 10th Mountain Division, Colonel Kip Ward worked with 1,267 from the Royal Moroccan Forces in coalition operations in Baledogle. To round out the coalition environment of the 10th Mountain Division, 1,141 troopers from the 1st Battalion Royal Australian Regiment came under command and control of TF Mountain.³⁴ US Army logisticians provided potable water, fuel, air transport, and echelon III medical support to the coalition forces working under the Task Force Mountain banner.

As MG Arnold and his divisional units arrived in theater, a UN change in the operational headquarters occurred. The UN Secretary-General's special representative in Somalia notified the JTF SOMALIA headquarters that he "desired that the task force be renamed UNITAF (United Task Force) to reflect the UN's role in the peacemaking operation."³⁵

As the newly designated UNITAF staff further designed the game plan in country, Colonel Hatton's request for a Support Command began to take shape. Under the newly established JTFSUPCOM banner, Brigadier General (BG) Billy K. Solomon was selected for this command on 14 December 1992. BG Solomon, commander, 13th COSCOM, arrived in country with the responsibility to resource common item and Theater Level Logistics support for the UNITAF operation (see figure 6).³⁶ The mission statement of the JTFSUPCOM follows:

Provide logistics and medical support for US forces, and common items logistic support (e.g., combat rations, bulk water, class III-bulk, and transportation service) to coalition forces. Provide common user port operations.³⁷

The J-4 staff reduced its numbers in increments as the JTFSUPCOM arrived in country during the first 50 days of operations. On 29 January 1993, JTFSUPCOM assumed the theater logistical support responsibilities. JTFSUPCOM picked up many responsibilities previously accomplished by members of the J-4 staff. BG Solomon's JTFSUPCOM staff was

primarily a US Army organization, with augmentation in the form of liaison officers from civilian relief organizations, coalition forces, major subordinate components of the ARFOR, and other US sister services.

The JTFSUPCOM Headquarters' mission required subordinate logistics units to provide logistical and medical support to US forces and, as required or directed, coalition forces deployed in support of Operation Restore Hope. The JTFSUPCOM assumed responsibility for off load and clearance of the air and sea points of debarkation, traffic and movement functions, throughput to forward support areas, and common item support to allied forces as required.³⁸ The JTFSUPCOM assumed these logistics functions from the MARFOR on or about D+50. The commander of JTFSUPCOM, Brigadier General Billy Solomon, provided his intent for Operation Restore Hope:

I intend for the JTFSUPCOM to provide common item support for the coalition as defined: for US forces, any item or repair part that the support force has on hand and the supported force, regardless of service, needs is a common item; for non-US forces (coalition) common items are defined as Class I, water, Class III (bulk and package), transportation, and services.³⁹

Lieutenant Colonel Allan Cleghorn, commander, 4th Corps Materiel Management Center (CMC), Fort Hood, Texas provided the materiel management capability to support the JTFSUPCOM commander's intent. As a subordinate command of the 13th COSCOM Lieutenant Colonel Cleghorn deployed a forward cell of the 4th CMC to perform integrated materiel

management as directed by the JTFSUPCOM commander. The 4th CMMC (forward) became the JTFMMC upon arrival. The JTFMMC commander, Captain LeAnn Robinson, arrived in country to immediately begin to take over the materiel management functions from the MARFOR. The JTFMMC was aligned to interface by satellite communications with the Standard Army Intermediate Level System (SAILS) in Boston, Massachusetts. As Captain Robinson set up the JTFMMC, she received a listing of Department of Defense Activity Address Codes (DODAAC) for materiel requirements of coalition forces. She also received a listing of coalition partners authorized to purchase US supplies funded through the UN Trust Fund Agreement (see figure 5). The JTFMMC worked all classes of supply issues with various coalition partners. The Australian Regiment provided a contracting officer to work with the JTFMMC during their seventeen week mission in Somalia.⁴⁰

Tactical Logistics Functions

The JTF command and staff molded the coalition force together. Behind the scenes, the J-4 staff calculated all aspects of the logistical arena to relieve any potential burden from subordinate commanders and their soldiers. In the desert environment of Somalia every soldier would require every ounce of strength to meet the demanding missions ahead. All components of the tactical logistics

functions were taken into consideration. US Army logisticians used a matrix to determine the potential requirements of each coalition partner (see figure 7). Each major area of responsibility (AOR) required support from one or more of the tactical logistics functions (see figure 8). Each AOR submitted supply requests to the logisticians by way of the LOGSTAT report. The JTFSUPCOM and J-4 staff coordinated and monitored the theater stockages to assist in forecasting and acquiring future supplies and services for the US and coalition forces.

Manning

Manning the coalition force in Somalia provided logisticians many great challenges. The systems of manning include: personnel readiness management, replacement management, and casualty management. Each of the systems assisted the JTF/UNITAF staff in determining US and coalition personnel requirements for deployment, operations, and redeployment. Initially, the JTF/UNITAF staff focused on the flow of soldiers into Somalia. Once US or coalition forces arrived, the staff determined which services were required to sustain those troops (see figure 9).

The staff coordinated manning of liaison personnel for most contingents. Personnel with language skills were pinpointed and attached to provide assistance with non-English speaking coalition partners. Organized by

USCENTCOM staff, the manning functions for the operation set a standard for future coalition operations.

Personnel Readiness Management

The responsibility for assimilating ready forces for the US-led coalition operation belonged to the staff at USCENTCOM Headquarters. USCENTCOM staff screened a portfolio of each nation that responded to the Secretary-General, Mr. Boutros-Ghali's call for support to the Somalia relief effort. Defense Attaches from each of these countries traveled to USCENTCOM Headquarters for orientation briefings about the mission and its requirements.

The USCENTCOM staff developed a survey of each nation desiring to contribute troops to the humanitarian effort through the State Department. The questionnaire assisted the staff in determining what force structure could be composed from the volunteering nations. The staff studied the surveys to include the capabilities of each nation's military assets. The staff screened each nation's input to determine its ability to sustain and transport itself with organic assets once in country, as well as, its desire to function within the US rules of engagement and C² framework. The decision hinged on a volunteering country's usefulness to the operation given all the transportation, logistics, and other potential issues associated with

integrating them into the force.⁴¹ The degree of responsibility and difficulty faced by the USCENTCOM staff was best described by the CINCCENT:

The large number of countries offering immediate deployment of military forces presented further challenges such as how best to employ varied resources, organize such a force and maintain unity of command, and deal with logistic support requirements and varying levels of interoperability.⁴²

Replacement Operations

In the midst of planning the composition of the deploying forces, the USCENTCOM staff calculated replacement forces, and redeployment measures. The success of the CINC's staff, in building a force adequate to meet the mission requirements, resulted in a force structure involving over 20 nations. The number of participating nations rivaled the total number of nations contributing to Operation Desert Shield/Storm. The makeup of the multinational force included armed forces from Australia, France, Italy, Belgium, Pakistan, Egypt, Botswana, Britain, Canada, Greece, Nigeria, Norway, Saudi Arabia, Turkey, and Zimbabwe.⁴³ Also contributing forces in support of the peacekeeping effort included military representatives of: Morocco, Tunisia, Kuwait,⁴⁴ Bangladesh, India, Jordan, New Zealand, and the United Arab Emirates.⁴⁵

Casualty Management

Casualty management reporting remained critical throughout the operation. The J-4 and J-1 staffs required daily status reports to determine the exact number of personnel in country requiring support. Two types of status reports were used by the J-1 and J-4 staffs. Along with the J-4 LOGSTAT mentioned earlier, the design of a personnel status report (PERSTAT) enhanced personnel service support management within the theater (see figure 10). Besides current coalition data in both status reports, requirements for lodging, hospitalization, life support, fuel, and transportation could easily be coordinated. The daily J-4 staff meetings provided the cornerstone of the service support successes during the operation. Maintaining flexibility, the staff coordinated anticipated potential shortfalls in personnel service support, and worked together to integrate available assets on a daily basis. The status reporting system provided the JTF/UNITAF staff opportunity to solve many problems before they occurred.⁴⁶

Not all nations in the coalition required daily accountability of the their personnel, levels of supplies, and sensitive items. This requirement for daily reports became a new experience for some coalition leaders. As the operation progressed, requests arrived to the JTF/UNITAF staff to coordinate return of soldiers to their homeland.

Each nation reserved the authority to organize replacement operations, rotation policies, and casualty management.

Liaison

When the US forces arrived in Somalia, each coalition force approached them for varying requirements and expectations for logistical support.⁴⁷ US Army personnel who spoke the native languages of non-English speaking coalition partners became candidates for liaison duty. Availability of US Army foreign area officers (FAO) or former personnel exchange program (PEP) officers to coalition nations to assist with liaison duties was practically nonexistent. The value of exchanging officers and senior noncommissioned officers increased on a daily basis.⁴⁸

As requests arrived to liaison officers, they would coordinate with the element of the JTF with the authority to authorize support to civilian organizations and other nations' militaries. Although most liaison officers were not logisticians, many solved problems on crisis-by-crisis basis that may have otherwise escalated into unneeded conflicts.

Besides coalition forces' needs, many nongovernmental organizations (NGO), already in country, requested assistance. These civilian agencies included CARE, World Food Program, Save the Children Fund, International Red Cross, and various other privately funded

relief organizations. The military set up a representative to assist the NGOs within the military's capabilities. These organizations normally requested safety en route to needy areas, protection of grain storage areas, and protection at feeding areas. Soon other nations assigned to the UN operation came to the US military for assistance.

As the US military began to occupy facilities in Somalia, the NGOs and military units requiring support provided a point of contact, or liaison personnel, to speak with US military officials. The US forces organized liaison officers to work with these organizations.

An example of the liaison activity in this coalition environment occurred in the former Somalia University campus in Mogadishu.⁴⁹ The JTFSUPCOM set up its headquarters on campus. Besides the Task Force, the medical unit from Sweden and security forces from Tunisia and Morocco, collocated headquarters on the university grounds. Each unit provided a liaison officer to organize support with the JTF/UNITAF Headquarters.

On 4 May 1993, the Secretary-General approved the transition of the security mission from the US led UNITAF to a UN led force under the title United Nations Operations in Somalia II (UNOSOM II).⁵⁰ Liaison officers were required from the UN and US staffs to verify and exchange information, maps, and procedures. In some cases, areas of logistics were transferred from the US elements to civilian

contractors. These organizations provided liaison officers to assist in the civilian responsibilities. The liaison individuals from both the civilian and military communities were instrumental in the exchange of responsibilities from US to UN.

Future US Army support to coalition operations may require the US Army Personnel Command, Alexandria, Virginia to scrub foreign area officers and former personnel exchange officers for liaison duty. Also, logistics personnel may require logistics and language training with other countries forces to allow for efficient and effective support to coalition forces.

The success of the manning function in Operation Restore Hope was due in part to the USCENTCOM plan which designed the force structure in Somalia. This method provides future planners a way to screen potential coalition forces' operational and logistical capabilities. In this manner, the development of a US logistics structure for the operation may be tailored for rapid mission success and sustainment.

Arming

The coalition ammunition required to support coalition forces came from numerous sources and arrived on many ships, some without notice. Once off loaded, this ammunition awaited issue to the country who brought it. The

JTFSUPCOM assigned the 68th Corps Support Battalion (CSB) from Fort Carson, Colorado, the responsibility to store UN or coalition ammunition in the Ammunition Supply Point.⁵¹ The limited facilities available for logistical units, exacerbated the storage issue.

Shipping vessels carried various types of munitions. Many munitions were not compatible with US storage requirements. These standards or ranges are based on gross weight for field storage. A safety buffer based on the net explosive weight is used for depot storage. The US Department of Defense uses these calculations to determine the capability of munitions for storage and transport in containers, ship, truck, or airplane. The compatibility group defines distance between ammunition stocks in field storage.

The ammunition arrived in multiple configurations and contained varying amounts of explosives. The variety of munitions demanded a greater emphasis on safety, as the ammunition supply point (ASP) used field storage configurations. The challenge of maintaining safety levels in the ASP in this coalition environment, was compounded by lack of ammunition standard agreements. Along with the absence of agreements, the US munitions handlers lacked general knowledge of coalition ammunition. Munitions planners reviewed the security, materiel handling, and

transportation requirements for performing coalition munitions support.⁵²

The munitions planners determined that it was impossible to secure sufficient area in the original ASP to maintain the required quantity-distance dispersion for the amount of munitions stored. Concern expressed by the Quality Assurance Specialist (Ammunition Surveillance) the JTF SUPCOM leadership kept the pressure on to understand the potential hazards if left unheeded.⁵³ Fortunately, no explosion incidents occurred due to the ammunition storage methods used in the ASP.

As part of the original Theater Ammunition Management Plan, the JTF SUPCOM Ammunition Officer and the US Army Armament, Munitions, and Chemical Command (AMCCOM) Ammunition Support Team researched the procedures available to authorize emergency of ammunition to coalition forces.⁵⁴ The Security Assistance Management Directorate at the AMCCOM, Rock Island, Illinois, located the legal answer in the Foreign Assistance Act: The Defense Security Assistance Agency issues the implementing instructions and the President's signature is required. Additionally, the issue of ammunition to coalition forces requires official notification to the following:

- (1) US House of Representatives' Foreign Affairs Committee;
- (2) US Senate's Foreign Relations Committee; and

(3) US Senate and House Appropriations
Committee.⁵⁵

The methodology of the US President signing a document for the issue of ammunition to a coalition platoon, for instance, on duty protecting US Army logistics storage areas would not have been effective if the requirement arose. To provide a procedure to issue ammunition to some, not all coalition forces, existing US Security Assistance Programs came into use. In coordination with the JTFMMC, the Ammunition Support Team from AMCCOM designed a Foreign Military Sales acquisition procedure for coalition forces requesting emergency ammunition when their basic loaded was expended. Within the JTFMMC automation capability, a "Coalition Forces Stock Status" report was designed to provide visibility over coalition ammunition stored in the JTFSUPCOM/ARFOR ammunition support points.⁵⁶ Canada became the first coalition partner to request storage of ammunition stocks. During the operation, no losses of coalition ammunition within JTFSUPCOM/ARFOR occurred.⁵⁷

The Ammunition Support Team established the initial ammunition accountability, inventory, and control procedures. The team's mission is to deploy to a theater area of operations in conjunction with the Army's prepositioned afloat war reserve stocks.⁵⁸ The team provides stock accountability, visibility, and linkage to the US

Army's commodity manager for conventional ammunition at the National Inventory Control Point in Rock Island, Illinois.⁵⁹

The Combined Task Force (CTF) Kismaayo conducted explosive ordnance disposal operations in Somalia's southern sector. The CTF destroy munitions and weapons taken from numerous Somali factions conducting operations in the sector. During the operation, the 1st (Belgium) Parachute Battalion (reinforced) provided the CTF explosive ordnance disposal personnel and the US Army provided the demolition materials, including a class V package normally configure in support of combat engineers.⁶⁰ According to Major Thayer, 10th DISCOM Deputy Commander,

The destruction of a cache of Russian-manufactured torpedoes discovered at the port of Kismaayo by Belgian forces, a US Navy demolitions team deployed to Kismaayo and worked closely with the Belgians to destroy both the torpedoes and a large quantity of seized small arms and ammunition, as well.⁶¹

Fueling

The logistics staff of USCENTCOM determined that JP5 would be the fuel of choice in the Somalia environment. The burden of convincing the coalition forces that this fuel worked well as a substitute for diesel fuel fell into the hands of the USCENTCOM Joint Petroleum Office.⁶² The success of this staff in communicating the fuel technology paid other dividends. Its success opened the door for other successful coalition practices using US standards. The

coalition forces' use of JP5 revalidated it as the fundamental fuel policy that maximizes storage and distribution efficiency in base-based areas of operation.⁶³ The Belgium forces remained the sole coalition partner to request only diesel and MOGAS. The Belgium forces did not want JP5.⁶⁴ The responsibility for staff management of petroleum in Somalia belonged to Lieutenant Colonel Gregory D. Gibbons, J-4 Fuel Officer.

Petroleum Distribution

The JTF petroleum supply distribution system was operated by MARFOR until D+50. The bladder farm transferred by MARFOR units to US Army petroleum units at this time. This transfer became a large hurdle since the Service Secretaries had to work out the transfer of petroleum equipment from one service to another. The initial plan to use fuel from the Offshore Petroleum Distribution System (OPDS) to shore was unsuccessful due to high sea states;⁶⁵ however, the potential for successful employment of the OPDS continued to be an unknown due the US Army's lack of training with this ship-to-shore fueling system.⁶⁶ To take up the ODPS shortfall, Maritime Prepositioned Ships (MPS) with fuel capability arrived off Mogadishu's shores. MPS crew members floated four miles of fuel hoses from the tanker to shore, then pumped fuel into the fuel farm at Mogadishu's seaport.⁶⁷ Under US Army control, fuel became

the center focus of fuel storage and distribution in Somalia. The fuel system filled large bladders that worked very well in assisting with the supply point distribution system. As the theater matured, the JTF contracted with Wilbros Engineering Corporation of Oklahoma City, Oklahoma, to provide on-site technical assistance for the building of an inland pipeline. US Army soldiers built the pipeline using nineteen foot aluminum sections.⁶⁸ With the new pipeline, the 240th Petroleum Battalion's ability to support the US and coalition forces were enhanced.

The petroleum supply distribution system used by the JTFSUPCOM allowed the US and coalition transportation assets to move and refuel throughout the theater. The system sustained the Mogadishu area and the four major support areas of responsibilities (AOR) with petroleum distribution points. Bulk fuel managers coordinated the use of supply point distribution of fuel for the US and coalition units. The JTFMMC and 10th Mountain Division Materiel Management Center (DMMC) verified bulk fuel forecasts and usage reports and developed a fuel distribution plan based on available fuel, transportation, and priorities.

The fuel distributed in direct support of coalition forces was stored in the Mogadishu general support base. US Army petroleum trucks, from transportation medium truck companies, delivered fuel to several areas of responsibility petroleum points. Some of the petroleum supply points were

operated by coalition forces. For example, a US Army petroleum truck would support the Baidoa area of operation with fuel from the Mogadishu fuel farm. The Australian regiment operated the petroleum truck supply point in Baidoa. In turn, the French moved their petroleum trucks from Oddur to Baidoa to refuel on a regular basis.⁶⁹

Petroleum transportation assets proved their worthiness to the US and coalition forces, particularly the M978 heavy, expanded-mobility tactical truck (HEMTT). The ten-ton HEMTT's capability to maneuver throughout the country's primitive road-and-trail infrastructure, proved invaluable in providing fuel distribution to US and coalition areas of responsibility.

Interpretability

Several coalition partners arrived with organic fuel tankers. Most of the tankers were compatible with the US fittings and nozzles. One exception included the Italian fuel tankers. The Company Commander of the 267th Pipeline Terminal Company, Captain Dan Bowen found the US tanker nozzles were not compatible with the Italians. After many techniques and ideas failed, the Company First Sergeant, Sergeant First Class Lynn Lavallis decided to use an aircraft fueling nozzle with the Italian tankers. This innovative method proved successful and quickly alleviated

the potential frustration and temporary lack of support to a coalition partner.⁷⁰

The Royal New Zealand Army provided a petroleum platoon in support of Operation Restore Hope. The New Zealand platoon assisted the 267th Pipeline Terminal Company, although they arrived without petroleum support equipment. They were quickly integrated into the US fuel farm and supply distribution system and "made significant contributions to the overall success of the petroleum mission in Somalia," according to Captain Dan Bowen, the company commander.⁷¹

Petroleum, Oils, and Lubrication Security

The 68th CSB encountered problems repairing these fuel bladders that followed the warlords' mortar or machine gun attacks.⁷² The soldiers became very efficient at emergency patch work, downloading fuel, then reloading it into the repaired bladder. A concern about security arose from time to time. The soldiers learned that a civilian would be willing to cut a hole in a bladder with a knife to acquire one gallon of fuel. This problem was particularly bad in the outlying areas such at Baledogle.⁷³ Not only was this a great loss of fuel, the repair of a cut in the bladder took hours to repair.

An example of the coalition problem with fuel storage operations included a request for fuel from the UN

to the nation of Pakistan. Pakistan's military vehicles use a motor gas (MOGAS), much the same as the fuel Americans use in their automobiles. This fuel is highly flammable and requires special handling and storage. The Pakistani military shipped their fuel to Somalia. The MOGAS arrived to the seaport in 55 gallon drums. The total quantity sent by Pakistan contingent measured over 200,000 gallons. The drums were moved to a UNOSOM headquarters building and remained until the US petroleum units were notified by a member of the UNOSOM headquarters staff that a storage problem may exist.⁷⁴ The JTF assisted in providing a storage location for the fuel. The 68th CSB received the task. The 68th CSB coordinated the movement, accountability, and safe storage of the MOGAS.

Soldiers and Marines, responsible for storing petroleum products for the US and coalition forces, experienced great difficulty handling and stacking these barrels of MOGAS fuel. US military units in the lodgment areas controlled the receipt and theater on ward movement of cargo, such as these barrels of fuel, for US and coalition forces. Once off loaded in the lodgment area, the barrels and other Class III packaged items were moved to a holding area. In the holding area, the items awaited the owning unit to claim and transport them out of the area. The barrels, once moved from the port to the compound, had to be moved to the Class III packaged item storage area. This

additional storage requirement necessitated the use of space and terrain in the petroleum storage area. The unit built a berm site for the fuel barrels.⁷⁵ The barrels of fuel were eventually issued to the Pakistani supply and transport unit.

A major concern of the 68th CSB centered on the protection of the fuel farm and fuel storage areas. The potential danger came from mortar and small arms ordinance hitting the fuel, thereby igniting an explosion. An explosion in the petroleum storage area could cause a chain reaction fuel explosions. Fortunately, the security procedures resulted in no explosions during the operation.

Petroleum Transportation

Several petroleum transport units provided tanker support to the operation. Unfortunately not all the tankers were compatible with Somalia's austere infrastructure. The 370th Medium Truck Company from USAREUR arrived with the new M969 7500 gallon tanker. These tankers are equipped without a filter separator. They performed well as bulk movers but could not be used with aircraft.

Communication

Within the port areas and in the fuel farms, communications among the US and coalition forces matured from day to day. On the airfield alone, over twenty

languages were spoken.⁷⁶ Fortunately, many US and coalition forces are multilingual, which assisted when arranging for certain quantities of fuel and petroleum products, accounting for fuel, and providing directions. Hand and arms signals took on new meanings, and caused varying amounts of chaos, as US Army soldiers guided the first coalition vehicle drivers into refueling lines. The communication problems did not overwhelm the forces as in Bible story of Babel.⁷⁷ The language differences did cause initial tensions in the early days of the operation, but were overcome by outstanding US and coalition soldiers working together.

The use of the PRC-127 radio proved its worth to the petroleum distribution units. This radio was small enough to fit on a soldier's web gear. The internal base communications network for the petroleum units kept them in contact with subordinate units and security units operating the fuel farm area.

Future operations may require US Army petroleum units to train with the Offshore Petroleum Distribution System, deploy only tankers with filter separators to austere environments, and provide training for rapid repair of damaged pipelines and storage bladders. The petroleum support to US and coalition forces succeeded because leaders planned ahead and were flexible and innovative. The centralized control of this commodity of supply contributed

significantly to the quality petroleum support to the US and coalition forces during Operation Restore Hope.

Fixing

Before the deployment began, the JTF logistics plan called for maintaining materiel readiness through restoration to operational condition or upgrading a piece of equipment through modification. The diversity of deploying weapon systems, transportation systems, and life support systems forced the planners to search the inventory for a broad range of maintenance capability from the entire US Army. The intent was to provide maintenance support to US units and, if the situation required, support to coalition forces. The planners sought to bring mechanics into Somalia who were skilled in diagnostic techniques and battle damage assessment reporting, equipped with the proper tools, and proper repair parts.

Class IX (Repair Parts)

The Army supply system used special designators to inform the supplier where the items are to be shipped. The materiel management centers adjusted the Department of Defense Activity Address Codes (DODAAC) and "ship to" codes for units in Somalia. DODAAC designators were set up to assist coalition forces who purchased certain repair parts or equipment through the US logistics system. US Security Assistance, US Cross-service, or UN agreements determined

how US Army logisticians supported coalition forces (see figure 5). The distribution system used special designators to identify the funding source repair part. The up front expenditure of repair parts' dollars by the US Department of Defense, although expensive, permitted a division to execute split-based missions in two hemispheres without loss in capability.⁷⁸

Before the 10th Mountain Division departed Fort Drum, New York for Somalia, the US Army' Deputy Chief of Staff for Logistics directed that a stockage of repair parts, i.e. authorized stockage list, deploy to Somalia. The 10th DMMC determined repair parts quantities required for each piece of equipment deploying to Somalia. Many of the required parts were not on hand at Fort Drum. High priority requisitions were placed in the Army supply system. Repair parts on hand at Fort Drum were split between the units staying in Fort Drum and the units deploying to Somalia. The split forwarded 40% of the on hand repair parts to Somalia.⁷⁹ The Army supply system immediately began forwarding repair parts to Somalia through US Air Force and civilian air transport services such as Federal Express.

As coalition forces faced maintenance problems for shortages of repair parts, they turned to the nearest US maintenance support unit. A Royal Moroccan Army signal soldier found that US Army hand sets operated perfectly with their radios.⁸⁰ This creative thinking along with the

availability of a simple repair part assured communications at a critical point in their operations. Other repair parts such as fan belts and hoses that were provided by maintenance support teams to various coalition mechanics and drivers.

Maintenance

Maintenance activities were headquartered in Mogadishu. Maintenance support teams and small maintenance companies deployed to the four support areas of responsibility (AOR). Also in support of US and coalition forces were members of the US Army's Logistics Support Element (LSE).⁸¹ All together, these US Army elements provided maintenance support, training, and advice for US equipment used by US and coalition forces. Due to limited experience with non-US equipment, maintenance support to the coalition forces was limited. US Army technical specialists in areas of communications equipment, generators, and heavy engine repairs provided limited assistance as required. Generator, refrigeration, communication, vehicle, and aircraft maintenance teams deployed early in the operation.

Weapon systems maintenance teams deployed as early as possible in the deployment sequence. The LSE from Fort Drum, New York provided maintenance support for US weapons systems as well as supply support systems in Somalia. These

systems were critical for life support of the US and coalition soldiers.

When the Belgium forces in Kismaayo [Somalia] acquired reverse osmosis purification units (ROWPU), the LSE provided direct support from their headquarters in Mogadishu. The LSE personnel provided training to the Belgium forces during the water purification units initial setup. The LSE provided on-call support for the units and were flown on several occasions to repair or diagnose a maintenance problem.⁸² Along with water purification support, the LSE supported the Tunisian military with maintenance diagnosis and repair with certain US radios such as the PRC-77 and PRC-146. The LSE proved an invaluable asset to the US and coalition forces in Operation Restore Hope.⁸³

The maritime prepositioned ships carried equipment for US and coalition soldiers to maintain an acceptable level of personal hygiene while deployed to the desert environment of Somalia. Certain equipment aboard the ships purifies salt water, while other machines use that water to launder clothing and provide showers. After off loading, the 68th CSB Operations Section conducted a maintenance inspection. Unfortunately, the inspectors found much of the equipment rusted or corroded.⁸⁴ The cause of this problem stemmed from the ship being in the salt water environment for extended periods of time and limited maintenance

performed on these machines over the past few months. The personal hygiene of the coalition soldiers was in jeopardy for a short period of time. JTFMMC and LSE personnel worked successfully to move repair parts for these items into the theater.

Older, low density equipment caused the maintenance teams several problems, especially in obtaining repair parts. These pieces of equipment included: laundry units, water purification units, and refrigeration vans. Field service support to US and coalition forces was delayed from time to time due to maintenance downtime. Many trained, soldier mechanics were deployed to Somalia; however, very few were trained to the level required to replace corroded wiring networks, computer boards, or large engine components. The required parts and maintenance information were sent to the agencies responsible to find, purchase, and forward supplies and qualified personnel to Somalia. In the mean time, energetic soldiers attempted to repair the equipment. Many soldiers worked long hours in an attempt to provide serviceable water purification units to coalition forces and civilians in need.⁸⁵ Several reverse osmosis water purification units were placed into working order while the Army supply system brought in the required parts.

In the future, serviceability of service support equipment aboard shipping vessels may require maintenance support teams to deploy annually to conduct inspections.

This would ensure training opportunities for younger maintenance personnel working on equipment no longer in service at their installation. Due to the age of some of the equipment aboard, a basic stockage of repair parts should be made available to units responsible for placing it into service for support to US and coalition forces. Future involvement in coalition operations may also require a variability in maintenance personnel skills.

US Army Materiel Command's Logistics Assistance Office

The US Army Logistics Assistance Office, Fort McPhearson, Georgia deployed several Army civilian and contract maintenance experts to assist US and coalition units in diagnosing and solving problems.⁸⁶ These Army civilians mentioned earlier are members of the Logistical Support Elements. In the 1993 version of FM 100-5, the mission of these elements is described:

Contractors and civilians provide support from within as well as from outside the theater of operations. In theater, contractors and DOD civilian assigned to a logistics support element perform specified support functions.⁸⁷

Many of these individuals were Army civilian veterans of Operation Desert Shield/Storm. The AMC civilian force immediately went to work on the most critical items identified by the Commander of the JTF SUPCOM. Many pieces of equipment were repaired within hours of the team's arrival in country.

Besides maintenance teams, AMC also provided a petroleum lab to examine new oil samples and samples of oil taken from equipment in use. The testing lab became a critical tool for the success of the transportation and flying forces when the UN contracted by Class III (package) products not "API" certified for weight and grade. Samples taken from equipment in operation were analyzed, which provided critical information about the wear and tear of the engine within the piece of equipment. In many cases the oil analysis predicted potential problems and directed maintenance personnel to the source of existing or potential problems, saving the military hundreds and sometimes thousands of dollars in new purchases.

In addition to maintenance and petroleum experts, AMC deployed key material managers to Somalia. The supply system experts, known as Logistics Assistance Representatives (LARS), arrived to supplement the Materiel Management Centers and provided theater level supply system management for procurement actions. The successful program of utilizing AMC civilian personnel, was directly responsible for the successful management of numerous, yet difficult supply transactions. Many pieces of US and coalition forces' equipment remained operational for the duration of the operation due to the efforts of the AMC civilian logisticians.

Future operations may require US Army Logistical Support Elements to provide even larger roles. The LSE value added to this coalition operation included the development of a seamless logistics flow with a direct link to the National Inventory Control Point to assist with supply requisitions and status.⁸⁸ Future Joint Task Force commanders may deploy a LSE with the J-4 to assist in the development of the theater logistics management and execution for US and coalition operations. The LSE remain in a high state of readiness and only require a life support system [unit to provide food, water, protection, and shelter] in an austere environment.⁸⁹

The fixing function's success during Operation Restore Hope was not due to superb planning. The maintenance successes occurred due to hard work and highly skilled and dedicated skilled US Army military and civilian maintenance personnel. Every effort in support of coalition forces' equipment consisted of a team effort involving US Army civilian and military maintenance and supply experts. The equipment did not always perform as scheduled; however, the personnel responsible to diagnose, repair, and procure serviceable equipment and supplies performed unselfishly throughout the operation.

Moving

The coalition forces arrived by air and by ship. Numerous contingents were flown to Somalia by their military's organic aircraft, whereas other nations arrived through arrangements of the US Department of State. Many coalition forces flown into Somalia through the State Department arrived in US Air Force cargo transport aircraft (see figure 11). According to Major Mel Vasquez, Jr., Tanker Airlift Control Center, Air Mobility Command, Scott Air Force Base, Illinois, the USAF provided over 100 sorties to transport coalition forces to Operation Restore Hope, in addition to large volumes of food, water, and utility items.⁹⁰ The USCENTCOM JLOC and the US Transportation Command representative coordinated the US movement of "those coalition forces incapable of self-deployment."⁹¹ According to Lieutenant General Martin L. Brandtner, US Marine Corps, Director of Operations (J-3) Joint Staff:

The US has unequalled military transportation and support capabilities, and we naturally were pleased to offer those services to help other nations quickly deploy and to participate in UNITAF. And those offers were key to getting the coalition formed and up and running quickly.⁹²

As the CINCCENT approved movement of a coalition force, the contingent's data was entered into the Joint Operations Planning and Execution System (JOPES).⁹³ Once aircraft became available these contingents were flown to Mogadishu. Unfortunately, many aircraft bringing soldiers

into Somalia arrived totally unannounced to the JTF staff or operations elements at Mogadishu's airfield. Notification of changes in arrival sequence failed to be forwarded to airfield operators on many occasions.⁹⁴ To solve the guessing game of arrival aircraft, the transportation units placed their trucks on stand by, sometimes waiting needlessly for hours and other times working around the clock to move in bound US and coalition forces.

Upon arrival, the JTF J-4 staff evaluated the personnel and equipment capabilities and shortfalls of each contingent. The J-4 Joint Movement Control Officer for the operation was Lieutenant Colonel Robert S. Bunn, US Air Force. He was assisted by liaison officers from the US Air Force Air Mobility Command, US Navy Military Sealift Command, and Military Traffic Management Command. If a particular coalition force required transportation assets, a plan to support the requirement was established at the J-4 daily coordinating meetings.⁹⁵

As storage managers monitored common item supplies, the transportation branch of the JTF monitored common user lift transport assets. The UN Movement Control Section functioned as a movement control center for the operation. Captain Paul Angelatos, Australian Royal Army Transport Corps, coordinated transport requirements for the coalition forces for the first six months of the operation.⁹⁶ As requirements arrived to Captain Angelatos operations desk,

requests for convoy escorts to the Joint Operations Cell at the UN. The Joint Operations Cell provided Captain Angelatos a point of contact for the coalition partner that would provide the convoy escort. According to Captain Angelatos, "Basic problems included language differences, flexibility of time and direction, and radio frequency incompatibility."⁹⁷ The need for US linguists who were logisticians existed in the transportation area.

Materiel Transport

The 8,000 mile journey from US POEs stretched the air and sea transport systems supporting the US military. One of the fundamental means of resupply to the coalition forces was with commercial containers. These containers provided an efficient method of shipping most classes of supply, to include medicine, into Somalia. The unit given the mission to control container movement from the US Ports of Embarkation (POE) to Somalia Ports of Debarkation (POD) was the US Military Traffic Management Command (MTMC).⁹⁸

Once in country (D+50), 49th Movement Control Center (MCC), 13th COSCOM served as the executive agent for inland container control and assumed intra-theater air responsibility⁹⁹ (see figure 12). The 49th MCC coordinated with the shipping activities and the JTFMMC to maintain visibility of containers, multipacks, and port transportation assets. The JTFMMC advised the 49th MCC of

transportation assets. The JTFMMC advised the 49th MCC of the destination of in bound supplies and equipment. Many difficulties occurred with the movement of these containers. Limited lift capability inland caused many delays in movement. Light divisions, such as the 10th Mountain Division, are not authorized rough terrain cargo handlers; however, the light divisions are authorized containers. In an attempt to alleviate this problem, JTFSUPCOM directed that containers not be transported forward of Baledogle. The transportation units wound up transporting the boxes and off loading them at the supply distribution points.¹⁰⁰

The 7th Transportation Group prepared the documentation to clear the containers through port, off loaded the containers onto unit vehicle, and moved the containers to the receiving unit. Once the containers were on hand at the receiving unit, a daily container report was submitted to the MCC. The 49th MCC directed the return of the containers to port where the 7th Transportation Group maintained an empty container holding area. The priority of movement for containers was given as perishable items, refrigerated cargo, Class I, and Class IX. The container method proved effective in providing in-transit visibility, flexible transportation support, and positive sustainment to the coalition forces.

Main Supply Routes

Upon arrival in country, two main supply routes (MSR) were in use. The "K4 CIRCLE" AND "MEDINA MARKET" provided the road structure that was used by the civilian agencies moving food to both city and outer feeding centers.¹⁰¹ The military initially used these routes, since an immediate mission was to secure the routes of the civilian convoys. The K4 Circle route passed through a major marketplace, therefore it was discontinued. With only one route, those who did not want the military in Somalia placed many mines and obstacles along this route. Many problems broke out along this route and other supply routes. On numerous occasions, US and coalition soldiers were injured by mines and civilian attacks.¹⁰²

US Army engineers arrived to build or rebuild US and coalition supply routes as well as airfields. Once the construction material arrived from Kenya, the engineers constructed a key MSR around the south end of Mogadishu to the airport to ease the inner city traffic problems. The Australian Defense Force (ADF) assisted in the movement of construction material and other critical supplies with the HMS [Her Majesty's Service] Tabruck, a roll-on roll-off ship. The 36th Engineer Group wasted no time in constructing the southern route to the airfield which measured about seventeen miles in distance.¹⁰³

Transport Security

As the turmoil continued, the requirement to increase road security grew in greater proportions than the UN had personnel. The need to provide trained personnel for road security 24 hours a day was difficult but important. Some coalition drivers and leaders would delay support to various outposts until the security forces and explosive ordnance personnel had inspected cleared the roads.¹⁰⁴ This became critical when an outpost required food, water, or ammunition for survival. An example of the problems incurred by the transport convoys is related by Private [PV2] John Stine, 10th Transport Company, 10th Mountain Division:

The roads were blocked by tires on fire, rocks, and basically anything they [Somalis] could use to block off vehicles. There were hardly any people on the streets or none that could be seen. There was then rock throwing and gunfire that was mostly coming from the right of the truck. There was one round entering the cab and possibly more. The driver was hit in the right lower thigh and I was hit by shrapnel in the right shin.¹⁰⁵

Transport Communications

Without warning, the coalition security forces stopped all movement along the main line of communications on 10 January 1993.¹⁰⁶ When the coalition security forces stopped this movement, the main supply route was closed to all traffic, including military convoys, for several hours. The 68th CSB in the JTFSUPCOM had not been notified of the

action nor of any other military activity in the area.¹⁰⁷ Several JTFSUPCOM convoys became stopped or slowed down along the route. The coalition action along the major road structure caused many delays in delivery of critical medical and water supplies to areas outside Mogadishu. Within hours the JTF SOMALIA staff worked through the issue and traffic flow returned to normal.

To add to the road delay problems, many US Army transportation units supporting the coalition forces could not communicate with each other or with US or coalition forces.¹⁰⁸ The transport units were not equipped with adequate radios to communicate their location, activities, and problems. Unit leaders' ability to track vehicle locations was seriously affected by this shortfall. Communicating within Somalia's austere environment did not allow for Host Nation telephone or cellular phone systems working as successfully for units as they did during Desert Shield/Storm.

Frequency Modulated (FM) radios authorized in transportation units have an optimum range of 25 miles when mounted on a vehicle and 45 miles in a base station configuration. A few leader vehicles were equipped with MSC, which was helpful when used within convoys when within range of a node. Only a few AM radios, which provide long-range communications, were available for leaders to communicate with their convoys in outlying areas such as

Baledogle. MARFOR truck units arrived to Somalia equipped with HF. US Army transporters often sought MARFOR trucks out when in need to get a message back to their headquarters.

When unit leaders lost the ability to communicate with drivers and convoy commanders, it caused loss of time and delays in redirecting supplies and equipment to the destination. This issue became more important as MSRs were interdicted by factions supporting radical warlords that wanted the supplies on board each UN supply truck. To provide adequate communication and security assistance to the transportation units, coalition forces provided additional escorts, communications, and road security in hostile areas of Somalia.

With the US Army's transition to a force projection force, future operations may require the 7th Transportation Group to integrate training with contingency battalion and brigade deployments. Additionally, commanders may need to add long range radios to their units' tables of organization and equipment for future authorization and purchase. Training in convoy security procedures may save lives of soldiers deployed in coalition operations of the future.

The success of the moving aspect of Operation Restore Hope was due in part to the 7th Transportation Group's capabilities. The US was the only country in the coalition that could technologically execute this aspect of

the operation. The capabilities included the ability to rapidly prepare its unit for deployment, reassemble the unit in Somalia to assume the port's theater reception role, and provide guidance to transportation units moving personnel, supplies, and equipment throughout Somalia.

Sustaining

The logistics function of sustaining the soldier incorporates operations that provided personnel service support, field service support, and general service support to US and coalition forces. When the JTF J-4 staff worked Operation Restore Hope's sustainment operations, it considered this function first. They ensured the soldier would be cared for. The JTF J-4 used various logistics methods to sustain the US and coalition soldiers to include cross-levelling stockages, allocating supplies, and developing a basic supply issue of rations, fuel, and water in days of supply. Each area of the sustaining the soldier function required an examination of the subcomponents; however, only which applied were investigated.

Personnel Service Support

A major responsibility for the staff officers in the coalition environment became personnel accountability. As coalition forces arrived, many did not conduct strict personnel and weapons accountability measures as the

American contingent required. Therefore, PERSTAT reports were provided from each contingent to the JTF staff daily.

Along with accountability of personnel, morale became an issue to US Army elements providing personnel service support. Due to many stressful changes in each soldier's transition from home country to Operation Restore Hope, the US Army determined the need for an area designated to build the morale of the force. During the operation, the US Army set up a morale, welfare, and recreation center. A beach house and recreation center were made available to those participating in Operation Restore Hope. The focus of the area was to allow soldiers to relax for a short time, settle their minds, and go back to their units ready to perform. The recreation area functioned very well throughout the mission for US and coalition soldiers, alike. The Tunisian leaders, in particular, enjoyed this area which allowed their soldiers some time to regroup during the humanitarian mission. This area provided stress relief and enhanced the morale of US and coalition forces.¹⁰⁹

Health Service Support

The JTF/UNITAF staff responsibility for Health Service Support (HSS) belonged to the J-4 Surgeon, Captain M. Cowan, US Navy. He was assisted by Colonel R. T. Burden and a small staff made up of Medical Service Corps officers, a doctor, and a dentist. Each US service arrived with their

own organic medical assets. The US Army assigned the ARFOR HSS role to the Colonel Ian "Red" Natkin, 62d Medical Group from Fort Lewis, Washington. The headquarters and its subordinate elements were alerted, beginning on 5 December 1992. The Group's subordinate commands were provided using modular units from numerous US Army medical assets in the US and Germany (see figure 13). The 62d Medical Group's taskings included:

- (1) Forward deploy medical assets to Somalia;
- (2) Provide area medical evacuation (MEDEVAC) support;
- (3) Provide single item management of Class VIII (medical supplies);
- (4) Provide preventive medicine activities.¹¹⁰

The Commander, 62d Medical Group, provided an Echelon III [level of medical care] hospital with dental services, preventive medicine, and evacuation assets at the University in Mogadishu (see figure 14). In each of the outer support areas, the commander placed evacuation assets, ground and air, medical support teams, and preventive medicine teams to provide assistance as required. Larger coalition partners brought Level II and most brought Level I medical assets. Australia, Belgium, and Canada provided Level II medical support in their support areas (see figure 7). Both the Swedish and Moroccan coalition partners provided field hospital care.

The Swedish collocated with the 62d Medical Group's hospital, providing Echelon III health service support to most of the coalition soldiers and Somali civilians. The US provided the Sweden's hospital personnel A-rations and Class IV for their use during the operation.¹¹¹

When providing US medical support to coalition forces as stated in figures 7, 8, and 14, several considerations must be taken into account. Not all coalition nations have the same standard of medical care, and those nations that do have the same standard of care do not necessarily provide that standard to their military forces.¹¹² Although combat life savers existed at most US Army companies in Somalia, few coalition partners provided this essential level of care to their soldiers. Most coalition partners provided fewer medics forward with troops than US forces did in Somalia.¹¹³

According to the Joint Special Operations Command Surgeon, Lieutenant Colonel (Doctor) Philip Volpe, most coalition forces "are poorly interoperable with the US military field medical facilities and equipment." Standards of care for enlisted and officers differed from country to country. Many nations signed up civilians for military duty with medical problems and disabilities. Additional problems encountered with coalition soldiers in Somalia were high blood pressure, murmurs, and diabetes.¹¹⁴

Lieutenant Colonel Volpe discovered many medical interoperability differences while on duty in Somalia. He explained:

Many coalitions nations' level of training and requirements for doctors, physicians' assistants, nurses, and medics are the same [as in the US]...however, medical standards are different for people, equipment, and training.¹¹⁵

He found the standards between coalition partners varied from contingent to contingent. Standards for blood procurement, storage, transfusion, and disposition is not the same as the US Army standards. Additionally, standards of medical readiness included the fact that not all coalition nations required:

- (a) HIV test every 1-2 years and upon entry to military duty;
- (b) Inoculations for Yellow Fever or Plague;
- (c) Tuberculosis testing yearly;
- (d) Anti-malaria preventive care;
- (e) Medical training programs such as Combat Life Saver, Emergency Medical Treatment, or Paramedic.¹¹⁶

Medical Evacuation

The MEDEVAC support provided to US and coalition forces deployed from an aviation company stationed in Europe. In Fifth Corps, United States Army Europe, the 159th Medical Company (Air Ambulance) received a deployment tasking order on 12 December 1992. The commander, Major

Pauline Knapp, mobilized her unit as part of Task Force 5-158 Aviation. En route to Somalia, the unit self deployed fifteen UH-60 Blackhawk helicopters to Livorno, Italy. The ground support equipment arrived in Italy by rail. Once loaded onto the ship *American Falcon*, helicopters and ground support equipment departed for Somalia. Unit members flew to Somalia ten days later to off load and ready the helicopters for desert MEDEVAC operations. The unit flew to Baledogle and collocated with the 12th Aviation Brigade.¹¹⁷

The 62nd Medical Group tasked the 159th Medical Company with theater MEDEVAC for US, coalition, and NGO personnel. To support this mission, Major Knapp split her operations over the 4 support areas of responsibility. She divided her aircraft as follows:

- (1) six each UH-60s at Baledogle
- (2) two each UH-60s at Kismaayo
- (3) two each UH-60s at Bardera
- (4) two each UH-60s at Belet Uen
- (5) one each UH-60 on call for the Australian unit¹¹⁸

The unit provided critical support to US, coalition, and NGO personnel, as well as local nationals during the operation. With the split based operations, the 159th Medical Company moved personnel to Echelon II and III sites. Missions supported personnel who had malaria, snakebites, gunshot wounds, bat bites, and vehicle accidents. The unit

also transported medical personnel, equipment, blood, and supplies.¹¹⁹ The supplies originated in country from the 32nd Medical Logistics Battalion from Fort Bragg, North Carolina.

To expedite evacuation of personnel to Navy hospitals set up off shore, the unit qualified most crews to conduct deck landings. Successful patient transfers occurred during the operation to US ships including the Wasp and Tripoli. Once coalition forces arrived in theater with MEDEVAC capabilities, the 159th Medical Company downsized its operations and moved its area of operation into the Mogadishu.¹²⁰

Although the 62d Medical Group did not take the Theater MEDEVAC responsibilities until 21 January 1993, the commander's statistics from 22 April 1993 reflect the unit treated 30 coalition and 71 Somali patients at its Level III hospital. The evacuation unit conducted 30 ambulance sorties for coalition personnel and totaled over 200 total sorties.¹²¹ Additionally, the evacuation unit flew over seventeen hundred hours accident free miles.

Preventive Medicine

The 62d Medical Group's preventive medicine teams faced great challenges in one of the world's disease capitols of 1993. This country was experiencing one of the highest health risks in the world, including malaria.¹²²

Warnings from area experts were briefed to all soldiers entering the country to include the fact that "potentially life threatening ones [diseases], begin with flu-like symptoms, headache, muscle aches, and fever."¹²³ To add to the difficulties of combating existing diseases, Somalia has one of the largest concentration of poisonous snakes anywhere. According to Colonel Hatton, JTF J-4, Somalia was "truly a target rich environment"¹²⁴ for the preventive medicine personnel. Diseases, snakebites, and mosquitoes had no bias for Somali, coalition soldier, NGO, or the press. The preventive medicine teams conducted aerial spraying on several malaria infested areas with direct support from the 159th Medical Company (Air Aviation).

The preventive medicine personnel also conducted critical surveys of reported problem areas. The areas included: mosquito surveys, rodent control surveys, epidemiology surveys, and disease outbreak investigations. The planning and execution of the JTF/UNITAF preventive medicine program across the coalition forces was outstanding. Preventive medicine country in-briefs, prepared by the J-4 Preventive Medicine Officer, Lieutenant Commander R. K. Hanson, were provided to each coalition commander during the operation. The opportunity for disease, poison, or even death was great and very few cases arose during the mission.

Veterinary medicine personnel provided a mixture of support to the coalition forces in Somalia. Veterinarian team focused on preventing, diagnosing, and treating animal diseases and manage other animal disorders. Additionally, they arrived prepared to perform minor animal surgery as well as prescribe and administer drugs. In Bardera, a report of a bee infestation arrived to the 62d Medical Group operations. Coalition forces requested US health service support. A veterinary medicine team was dispatched immediately. Upon arrival the team rapidly eradicated the bees bringing praise from coalition forces and Somalis alike.¹²⁵

In Baidoa, the veterinary team made scheduled visits to treat the K-9 German Shepherd police dogs the Australian regiment brought from Townsville, Queensland. The Australians depended on the teams to keep their K-9s disease-free and to increase the animals' productivity.¹²⁶ Besides managing animal diseases and eradicating swarms of bees, they were involved in inspecting meat for human consumption. The veterinary teams inspected Tunisian cattle before slaughter, which provided a health safety net for Tunisian and other coalition soldiers who ate with the Tunisians.¹²⁷ From minor checkups to preventing, controlling, and eradicating disease, veterinary teams supported many facets of coalition needs which enhanced their soldiers' morale, health, and welfare.

Field Sanitation

Army Field Sanitation became an important issue soon after the 10th Mountain Division arrived in Somalia. Most US or coalition partners did not deploy with sufficient quantities of field sanitation kits. Concern over field sanitation grew as it was discovered that slit trenches and catholes were not acceptable replacements for latrines. Sanitation kits were critical to maintaining effective coalition preventive medicine.¹²⁸ Most trench and cathole techniques do not meet the standards of the Army Field Sanitation Plan.¹²⁹

Slit trenches were not acceptable replacements for proper latrines. The shortage of running water, porcelain toilets, and lumber forced a "life-cycle of latrines" upon the coalition forces.¹³⁰ Similar to disease and snakebite, the latrine dilemma hit every area; no individual was granted immunity. When the buildup of an area in Somalia first occurred, slit trenches worked in lieu of latrines. As soon as fifty-five gallon drums could be hurried to the new site, a new version of the latrine became available. Upon arrival of lumber in the theater of operations, the ultimate in the life cycle of Somalia latrines became available, the two and three hole prefabrication latrines.¹³¹ All US and coalition force participants, from General Johnston to the newest Egyptian soldier arriving at Mogadishu airport, were met with the latrine dilemma.

The logisticians soon contracted with Brown and Root to provide portable latrines for use in Somalia. Although this contract came into effect, the number of latrine units and the sewer trucks required to siphon the waste were in short supply six months later.¹³² Preventive medicine specialists monitored this closely to maintain the quality of sanitation in critical areas. The efforts of these specialists prevented potential diseases by enforcing the Army Field Sanitation standards.¹³³ Future coalition operations must continue to use preventive medicine and field sanitation measures as a force multiplier to alleviate the effects of disease and non battle injury.

Field Service Support

Field Service Support in Somalia assembled units from several posts. Many units, considered Echelon Above Corps (EAC) assets, were deployed to perform a specific functional mission, e.g., mortuary affairs, laundry, and water purification. The logistics planning for field service support units occurred early in the process. The J-4 Logistics Operations Officer, Lieutenant Colonel D. Long, monitored most of these areas on a daily basis. One of the priorities of the JTF J-4 was to build the logistics civil augmentation programs (LOGCAP) as soon as possible. The faster the build up of civilian logisticians, the fewer soldier-logisticians would be required in theater. The

first few contracts were award to Brown and Root, Incorporated, and the Wilbros Engineering Corporation, to provide field service support and technical expertise in laying pipelines, respectively.

Mortuary Affairs

The 54th Quartermaster Detachment, Fort Lee, Virginia provided mortuary affairs support to US and coalition forces in Somalia. The unit focused their efforts towards totally recovering, identifying, transporting, and preparing remains for theater evacuation.¹³⁴ Normal UN policy for Mortuary Affairs describes remains processing as a "National Responsibility." This would require each coalition partner to prepare their own remains for transport outside the theater. Under the authority of Cross-Service Agreement 607, mortuary affairs support was provided on a reimbursable basis. The US Army's first Mortuary Affairs Officer in Somalia, First Lieutenant David B. Roath, wore three hats. Within the J-4, he worked with Mortuary Affairs Officer, Major M. M. Morse, US Marine Corps as the Joint Mortuary Affairs Officer. He also served as the assistant G-4, US Army Theater Mortuary Affairs and Detachment Commander, 54th Quartermaster Detachment.¹³⁵

With the J-4 staff, Lieutenant Roath developed a system, to include forms, that complimented the existing US Army Mortuary Affairs accountability, costing, and transfer

of pouches, transportation, and preparation of remains.¹³⁶ In the first one hundred days of Operation Restore Hope, Lieutenant Roath and his detachment processed over fifty remains, including seven coalition partners. Over the next few months, the numbers of coalition support required from the Mortuary Affairs Detachment rose to forty. Throughout the operation, the detachment remained sensitive to special requests from coalition partners with special requests for care of the remains.¹³⁷

Upon arrival, Lieutenant Roath surveyed the local area and found no facilities available for the Mortuary Affairs operations. He coordinated with USAF personnel on the JTF staff. Soon equipment and tentage arrived from one of the USAF's Harvest Falcon storage facilities in the Middle East. This equipment and tentage is normally used by the USAF when operating out of bare based environments. Once assembled, the kit is referred to as the Air Force mini-morgue. The loan of equipment for the Mortuary Affairs operation included Temper Tents, air conditioning units, generators, and two larger refrigeration units. The refrigeration units arrived without racks; therefore, a priority request for plywood resulted in the arrival of the material to build racks for the remains. Once the detachment organized the equipment on the Mogadishu airfield, a total storage capacity of forty-five remains was available.¹³⁸

During Lieutenant Roath's search for a suitable facility for his operation, he considered host nation support. He toured the Digfer Hospital in Mogadishu to inspect the mortuary equipment and storage area. Upon receiving the tour, he described the mortuary room as "unsanitary and filthy with body parts scattered around the room." To use this area, he offered to clean the area, sanitize it, and provide a repairman for their refrigeration unit. The hospital staff accepted the offer, which provided the detachment an additional remains' preparation and storage area for US and coalition requirements. The relationship worked for both parties involved until the UNITAF units fired on a clan leader and his lieutenants that the hospital staff favored. This stopped the use of the host nation support for Mortuary Affairs.¹³⁹

When given the responsibility for the preparation of a coalition force soldier, the detachment followed all US Army regulations with few exceptions. The basic regulations covering identification, finger printing, statement of recognition, and overseas death certificate remained in effect. The most notable difference in processing coalition remains occurred when the detachment prepared the remains of a soldier of the Muslim faith. After the remains were prepared but before shipment, the leaders from the coalition force of the Muslim soldier would perform a short ritual, dress the soldier's remains in a shroud, and place the body

in the remains pouch. The detachment took over at that point and placed the pouch in the refrigeration.¹⁴⁰

During the operation several coalition partners prepared their soldiers' remains and gained permission to store them in the 54 Quartermaster Detachment's morgue. The detachment's area became the Theater Mortuary Evacuation Point for all US and coalition soldiers' remains. Most remains, including all US remains, were evacuated by air to US facilities in Germany or the Azores for shipment to the final destination. For US forces, Germany and the Azores were the only refuel and re-ice point for final shipment to Dover Air Force Base, Delaware.¹⁴¹ Other coalition forces provided their military aircraft to fly remains out of Somalia.¹⁴²

Field Bakery Operations

Field bread bakery operations were not available in Somalia. Bread is a key provider of fiber which soldiers need, especially in an austere environment. It is a universal morale builder, like bottled water and mail. Unlike pork in US Army Meals Ready-To-Eat (MRE), bread is not normally a food that causes controversy, unless its unleavened. Pouch bread was not available until D+59 when a successful contract was awarded.

During the operation, US and coalition force leaders authorized a local contract for bread-making services in

Mogadishu. US logisticians assisted the contractor in setting up and sanitizing an area acceptable to US standards for bread products. The operation was successful for about two weeks until the preventive medicine experts suspended the operation due to the contractor's inability to maintain sanitary conditions.¹⁴³ Several problems contributing to a local vendor's downfall included: the availability of potable water, personal hygiene standards, and US food standards. Numerous complaints stemmed from soldiers eating this bread including stomach aches, flies baked in the bread, and diarrhea.¹⁴⁴

A field bakery unit, which is capable of providing US and coalition forces bread for 18,500 people a day, was not deployed during the D-phase of Operation Restore Hope.¹⁴⁵ The 10th Mountain Division requested that ARCENT provide a field bakery unit for Somalia.¹⁴⁶ ARCENT denied the request due to the fact a troop strength restriction was in force.¹⁴⁷

With a cap on US Army personnel in Somalia, priority of personnel went to combat arms and combat support specialists. MREs became the primary food source for US Army personnel during the first few months of operations. With a bread making machine in the area of operations, US Army soldiers would not be the only personnel to benefit. Members of sister services, coalition forces, and civilians are among those who could benefit from a few machines and personnel assigned to a bakery unit.

One coalition partner provided bread once all the equipment and personnel arrived in country. The Royal Moroccan Forces baked bread for their troops, patients in their field hospital, and coalition partners when possible.¹⁴⁸ Due to the availability of the fresh bread, the morale of this coalition partner remained high through most of the operation. Their health problems were as few as any in the force. The bread provided one simple source of nutrition and morale. Future logistics planning for austere environments may consider the deployment of a bakery unit into the area of operations.

Class I (Water Purification)

In Somalia's austere desert environment, the JTF J-4 monitored the most basic of all human needs, water, more than any other logistics aspect.¹⁴⁹ As the MARFOR and US Army forces arrived in country, the necessity of providing purified potable water moved to the top of the logistics priorities. With the help of the Indian Ocean, the Afgooye well system in Mogadishu, and wells dug by US Army Engineers, US Army and Marine water purification units produced over one-half million gallons of water per day. Once purified, the potable water remained stored in various sized bladders until water tankers transferred the water to US and coalition areas of operation.

Under the UN agreement for this operation, the US would provide water as one of the common item supplies. Along with the MARFOR, the US Army water units produced water at various locations. After the US Marines transferred their 650-gallons per hour water purification units to the US Army, the water responsibility fell on the 240th Petroleum Terminal Battalion.¹⁵⁰

The mechanical devices responsible for purifying the water are the Reverse Osmosis Water Purification Units (ROWPU). At Gotham City, four 3,000-gallons per hour ROWPUs provided 264,000 gallons of potable water per day from water drawn from a reservoir. At the New Port site, three 150,000 gallons per day ROWPUs provided potable water to the US and coalition forces using sea water drawn from the Indian Ocean. Two 600 gallon per hour ROWPUs were located at both the US Embassy and University compounds. Each of the 600 gallon per hour ROWPU locations pumped 48,000 gallons per day for the personnel operating out of these areas. Additionally, 80,000 gallons of non-potable water was stored at both compounds. Most of the non-potable water at the university compound assisted US and coalition soldiers when washing military vehicles.¹⁵¹

The bulk water distribution system was hampered by the number of water unit and personnel resources. To support US and coalition forces, the US Army had one active duty Water Support Battalion, the 559th Quartermaster

Support Battalion, Hunter Army Airfield, Georgia. This unit's headquarters was not mobilized for the operation; however, the commander, Lieutenant Colonel David Russell, did deploy a water purification detachment and a water transportation company. At present, two water support battalions are in the US Army Reserves. During the operation, three different detachments and water transportation units were deployed, each commanded by a general supply or a fuel battalion headquarters.

Coalition partners depended on potable water distribution for survival, personal hygiene, food preparation, and morale. The water transportation unit delivered water to Baledogle, Baidoa, Bardera, and Beledweyne. The focus of the bulk water distribution system, as large as the mission in Somalia, requires a command and control of water purification, storage, issue, transportation, and planning. Operations in arid regions such as Somalia may require that a water support battalion deploy in the future.

In the outer support areas of responsibility, four locations drew from wells constructed by US Army and US Navy engineers. Outer locations with wells supporting coalition forces included:

- (1) Baledogle: Moroccan
- (2) Baidoa: Australian
- (3) Bardera: Botswani

- (4) Kismaayo: Belgian
- (5) Oddur: French
- (6) Gialalassi: Italian¹⁵²

The coalition partnerships grew around water holes. In Somalia, water holes were located around water storage bladders holding potable water from ROWPUs. Numerous coalition soldiers asked their leaders to acquire ROWPUs. The Belgium contingent, in Kismaayo, requested water purification support when its ship-mounted water production facility was off station.¹⁵³ The US forces were not manned for this mission over the Combined Task Force Kismaayo's CSS Team Alpha capabilities. Although the team provided potable water support for the CTF, Belgium military officials requested purchase of (and later received) US-made ROWPUs through the UN procurement channels.

The Canadians went so far as to barter for US equipment such as ROWPUs. According to Lieutenant Colonel Don Young, the Canadian Joint Force Headquarters Chief of Staff:

Bartering is the name of the game here. The Americans lent us a water purification system, we lent them something else. They'll do anything for a box of IMPs [individual meal packets] or a Tilley hat.¹⁵⁴

Field Laundry Operations

Host nation support and LOGPAC provided laundry support for the US and coalition forces. In the desert

environment, a JTF J-4 staff concern was that clothes not washed frequently may build up bacteria deposits. Concern for the health and well-being of soldiers placed much emphasis on cleanliness. Supplies such as soap and detergents were shipped into Somalia to assist in removing soil and bacteria. Attempts with hiring local nationals to provide laundry services resulted in loss of clothes or a low standard of cleanliness. US Army laundry units were soon brought in. Brown and Root, Incorporated took over the laundry responsibilities. Water was a critical limiting factor in meeting laundry demands within the theater.¹⁵⁵ With the use of hot water, detergents, and bleaches in these washing machines, US and coalition clothing and linens were kept clean and virtually free of bacteria.

General Supply Support

General supply support in Somalia came in many different dimensions. Basic field rations and bottled water are normally supplemented by host nation support; unfortunately, Somalia's infrastructure did not allow for host nation support of much value. To provide general supply support, the logistics leaders opted for contracting through the LOGCAP, creative lodgment and storage operations, and coalition force procurement assistance through the Foreign Military Sales (FMS) program. US and coalition forces' ability to perform their mission, stay

healthy, maintain high morale, and survive was due in part to the success of each facet of the general supply support provided throughout the operation.

Class I (Rations)

When the JTFSUPCOM assumed responsibility for the logistics functions in Somalia, on 23 January 1993, the Class I ration inventory reflected a serious shortage of T-Rations in theater.¹⁵⁶ The standard 15 days of supply stockage level plus an additional 15 days of supply operating level could not be maintained. The tactical auxiliary container ship, the *Gopher State*, was scheduled to arrive in port a week later, 2 February 1993.¹⁵⁷ At this time, the dining facilities throughout Mogadishu reported T-rations at zero balance. Unfortunately, no plan existed to deliver the rations from the ship straight to the coalition dining facilities. Even though the rations were delivered in due time, the ration cycle resulted in a momentary break throughout Mogadishu. The coalition forces in Mogadishu received scheduled meals from the dining facilities. The JTF leaders' concern and action were critical in sustaining US and coalition force morale and confidence early in the operation.

The UN periodically requested "A" rations for the UNITAF forces to be served three times a day. The 68th CSB reviewed the requirement and found that the refrigeration

units could not meet the frozen storage requirement.¹⁵⁸ The 68th CSB noted that the mission would require large buildings, that were sanitized and converted into an area where food could be properly stored, refrigerated, and prepared. Mobile kitchens were a possibility; however, the required cold storage space for the food remained a major problem.

Coupled with fuel and ammunition, the coalition rations arrived in high quantities, various qualities, and almost no where to store them. The first rations to arrive in any quantity were the US military's MRE.¹⁵⁹ The 68th CSB used an area within the Sword Base compound located in Mogadishu to issue, receive, and store the rations. Soon other countries' rations began to arrive in large quantities. One coalition partner, Germany, sent a ship loaded with pallets full of their field rations to Somalia; although storage areas were scarce. The JTFSUPCOM again selected the 68th CSB to maintain the storage area for a particular commodity of supply. The 68th CSB issued MREs and other ration packets as the coalition forces arrived. Soldiers issuing MREs were briefed which countries could not eat MREs or certain meals, i.e., countries practicing the Muslim faith do not eat pork and Hindu soldiers do not eat beef. Coalition partners received briefings from the Class I ration supply point soldiers on types of rations available and methods to exchange unopened rations. Very few problems

occurred due to the initial command briefings by the JTF J-4.

The soldiers of each country shared their meals with each other as a common practice. Soon a favorite emerged among the troops. The UNOSOM directed that the French and German rations be procured and issued to requesting contingents. The Germans also provided the JTF a ration issue point, which assisted in coalition ration distribution. The myriad of field ration choices caused a problem with the US and Muslim nations, since the French ration contains a small bottle of wine and certain versions of the German ration contained a small container of beer.¹⁶⁰ The US commanders normally do not allow their soldiers to partake of alcohol during deployments, whereas the Muslim nations do not allow soldiers to drink alcohol anytime.

In support of Class I perishable foods, a critical piece of equipment required extensive maintenance. The trailer mounted tactical refrigeration vans provided refrigeration support for US and coalition perishable food supplies.¹⁶¹ The refrigeration vans, assigned to the 18th Quartermaster Perishable Subsistence Platoon, could not maintain temperatures in the equatorial environment. Several coalition partners sent food products in country that required refrigeration.

The Royal Moroccan Forces required beef to be refrigerated from time to time.¹⁶² These vans normally have

the capability to maintain temperatures from 75 to 32 degrees over long periods of time. Frozen foods, ice, meats, poultry, and other perishables depend on these vans to survive without melting or simply rotting. The vans, most manufactured over thirty years ago, broke down regularly. The maintenance experts worked hard to maintain the operational rates at 50%, thereby keeping one-half of the units up and running long enough to maintain the quality of critical perishables.¹⁶³ The preventive medicine personnel monitored the food in these vans to maintain the health standards of the coalition soldiers.

Future planning should include providing fresh rations to soldiers involved in coalition operations. Fresh vegetables, fruits, and baked bread should be included on this list. Technological advances will not overcome the health and morale effects of pleasing and fulfilling subsistence.¹⁶⁴ Food must not be considered a common receive, storage, and issue item like fuel. Special command consideration must take place in the planning stages of operations to ensure soldiers of the coalition receive fresh rations. Considerations will include additional storage, distribution, preparation, and sanitized facilities.

Class I (Bottled Water)

Before deployment, the 10th Mountain Division analyzed the use of potable water from the Reverse Osmosis Water Purification Units (ROWPU).¹⁶⁵ The ROWPUs could use

water from the ocean and from wells inside the country. Feedback from many soldiers indicated the taste of the water from ROWPUs was disliked. To supplement potable water from ROWPUs and to build soldiers' morale, the chain of command requested bottled water for the deployment. The plan to send bottled water pleased both US and coalition forces since most soldiers agreed the taste of bottled water was better than ROWPU water. The bottled water arrived in Somalia by aircraft and ship. The amount of water required was calculated by gallons per person. The coalition goal of JTFSUPCOM was to maintain a potable water stockage of 10 days of supply, using a figure of 20 gallons of water per soldier per day. The goal quickly became a challenge, as airfield and seaport stockages decreased to zero on many occasions during the operation.¹⁶⁶

During the operation, concern arose in the JTFMMC Headquarters as the total water storage, in days of supply, fell to two.¹⁶⁷ The JTFMMC focus moved to the ship with the bottle water resupply stored on board. It soon docked at an alternate port due to inclement weather at sea. The AFFOR deployed transport aircraft to airlift the bottled water to Mogadishu. The US Air Force's timely flight in support of the coalition operation relieved tensions and assisted in bringing the appropriate stockage level up to the JTFSUPCOM standard.

Several nations shipped water to the coalition operation. Most countries provided water that was containerized in boxes. The bottled water arrived in plastic containers normally stored in cardboard boxes and stacked on pallets. Other plastic bottles of water arrived shrink wrapped in groups of 6-24 bottles depending on the size. The boxed water proved easy to stack, transfer, and issue. The shrink wrapped water could not be stacked because the lower layers would crush and water leaked from the containers. To add to the problems, the shrink wrapped pallets broke easily and were very difficult to handle with material-handling equipment. Soldiers issued the shrink wrapped bottles as soon as possible to alleviate wasted storage space.

Along with the logisticians' shrink wrap problem, the situation deteriorated when a ship arrived at the port with over a million liter bottles of water. The bottles were containerized in cardboard boxes that became wet during the voyage to Somalia. Slowly, the weight of the top boxes caved in on the ones below and caused the total shipment to collapse.¹⁴⁸ Only 50 per cent of bottled water remained in one piece. The 300,000 empty and 300,000 full liter bottles were hand loaded into a cargo net and transported to a truck for movement to the bottled water storage area. A large pump removed the 300,000 liters of water from the hull of the ship. This mishap occurred on three different ships

before the UN logisticians modified the bottled water procurement process for containerization.¹⁶⁹

Future operations may require bulk water from ROWFUS in direct support of food service, laundry, personal hygiene, and medical support. Packaged water may be used to facilitate distribution and individual consumption. Since boxed water was shipped and stored with less losses than shrinked wrapped bottled water, future coalition operations should consider designing resealable boxed water to supplement water purification units' water output.

Class IV (Barrier and Construction Materiel)

The tactical logistics term 'fix' took on a stronger meaning during Operation Restore Hope. Roads, buildings, water walls, fences, and airfields required significant repairs and maintenance expertise. Therefore, repair materials for the maintenance of Somalia's infrastructure were added to the supply requirements for the operations.

Normally concerned with repair of vehicles and equipment, the JTF J-4 engineer, Colonel Robert B. Flowers, and logistics planners directed thousands of short tons of Class IV construction barrier materiel to the US Army's 36th Engineer Group and the Naval Construction Regiment 30. The 36th Engineer Group supported coalition forces in the southern half of Somalia under the command of ARFOR. Units

from France, Belgium, and Australia received support from the 36th Engineer Group.

The coalition forces used considerable amounts of concertina, engineer stakes, and sandbags that facilitated establishing orderly feeding lines in the humanitarian relief sectors. These items, including triple standard concertina fences, assisted units in establishing base perimeter security, marshaling areas for reception of unit equipment, and crowd control at unit command posts. The JTFSUPCOM headquarters area at the University of Mogadishu encircled with concertina to assist in establishing minimum security.

Besides the university compound, other facilities required material to simply reinforce walls and fences to provide protection of soldiers and their equipment from snipers, thieves, and rock throwing. Besides the structural shells, challenges to the construction engineers included heat, dust, insects, and crumbling walls. According to Lieutenant Colonel Don Young of the Canadian Joint Force Headquarters Staff:

All the buildings had been looted and debris everywhereThe buildings weren't looted, they were raped -- everything of value was gone.¹⁷⁰

Upon arrival the 593rd Area Support Group commander, Colonel Gilbert S. Harper provided the following assessment of the devastated city:

Power lines had been cut from the poles, water pipes dug up from the ground and toilet and light fixtures torn from walls. There was not a window left intact. What had not been hauled off and sold lay in pieces on the ground.¹⁷¹

Stockages of construction materiel were prepositioned on the USNS Cappella destined for Somalia were delayed due to mechanical problems. The MARFOR's Maritime Preposition Stocks of construction materiel were brought ashore to assist in filling the gap until the USNS Cappella arrived. The US Air Force ferried construction materiel into Somalia on a space available basis.¹⁷²

During the 10th Mountain Division's planning for this humanitarian effort, they were promised Class IV barrier equipment, lumber, barbed wire, and Rough Terrain Container Handling Equipment from prepositioned ships.¹⁷³ These critical supplies were needed in theater to support US and coalition units under the Task Force Mountain banner. Based on promised stockages of Class IV barrier material, the unit deployed without these supplies and equipment. Upon arrival, the requirement for this equipment in support of the coalition effort became obvious. Unknown to the 10th Mountain Division logisticians, the control of the Class IV equipment on the prepositioned ship passed from US Army to USCENTCOM to JTFSUPCOM. The JTFSUPCOM refused initial requests due to "higher priority" coalition force requests. This decision allowed coalition forces with higher priority to complete missions required by the JTF/UNITAF commander.

As the stockages of Class IV materiel in Somalia increased, JTFSUPCOM authorized issue to units based on priority missions.

Once the Class IV barrier and construction materiel arrived in country, the 36th Engineer Group improved airfields in areas of responsibility under control of coalition forces. The engineers supported all US and coalition units by improving main supply routes and constructing bridges, base camps, latrines, showers, and tent floors.

The transportation mission for Class IV barrier and construction materiel became the responsibility of logistics units during the operation. Construction materiel was transported to engineer supply points. From these supply points, the engineer trucks moved the supplies to the construction area. With these supplies, engineers repaired and upgraded roads connecting key cities and humanitarian relief sectors. They repaired over 1,000 km of Somali roads and constructed 150 km of new roads which increased the US Army transportation units ability to move fuel, food, and water to coalition forces throughout Somalia.¹⁷⁴ This unit repaired over 75,000 square feet of roofing that provided "better living conditions for coalition security forces."¹⁷⁵

Host Nation Support

Upon arrival to Somalia, the 68th CSB set out to determine what host nation support (HNS) was available. They wanted to purchase as many supplies and services as possible. In this manner only the essential supplies would require transport from the US. The search led them to the agriculture areas of Somalia. A contract for watermelons, bananas, and other fruit was initiated.¹⁷⁶ When the peacekeeping operations required bombing and raiding civilian areas of Somalia with USAF AC-130 and US Army Cobra gunships, a decision to cut back the fruit contract was initiated to prevent the shipment of tainted or poisoned fruit. Other services were contracted for as time went on, such as security, interpreters, and transportation.

Lodgment and Storage Operations

On 9 December 1992, the Marines established an area to receive incoming personnel and equipment around the seaport.¹⁷⁷ This area is called a lodgment area. The lodgment area was later expanded to the airport facility on the west end of Mogadishu. The MARFOR Headquarters provided security for each lodgment area. Within days, US Army and Air Force coalition partners, and prepositioned ships began arriving. The lodgment areas soon became congested with only minimal storage areas. The absence of storage areas

limited the options of the Army logistics units at Mogadishu's seaport and the airport lodgments.

To oversee the real estate around the lodgments, a mayor or terrain manager was required. Lieutenant Colonel Nathan Power, a member of the FM 100-5 writing team and author of many Joint Universal Lessons Learned for Somalia examined the situation and reported:

The 7th Transportation Group, 24th Transportation Battalion took over the civilian port operations facility for command and control. Marines that were unloading the Maritime Prepositioning Fleet (MPF) ship took over a portion of a warehouse facility for unstuffing multipack containers. As other nations' equipment and supplies came through the port it was moved out of the port to marshaling areas for each nation. The commander of the MPF ship assumed responsibility for Port operations, although he was never appointed by the Joint Task Force Commander to do so. He was not resourced in terms of staff or experience to perform the mission. His limited staff was augmented by the staff of the 7th Trans [Transportation] Group commander.¹⁷⁸

The terrain management at the airport proved just as challenging as the seaport. The Marine Forces Commander assigned his deputy chief of staff to lead the coalition support cell.¹⁷⁹ This central clearing agency allocated terrain and facilities as well as provided security for arriving coalition and US organizations. The arrival of multinational supplies and equipment swamped the port and the coalition support cell with personnel and equipment during the first 90 days. Many coalition conflicts challenged the support cell. The cell succeeded in

allocating space and maintaining security for arriving forces.

Foreign Military Sales

In the coalition environment, soldiers and officers from different countries have the opportunity to discover state of the art equipment in operation by other forces. In Somalia this occurred from the time equipment was off loaded at port through the time it became operational. The Department of Defense restricted US military leaders from giving away supplies and equipment. Since logistical aid was required in varying amounts from each coalition force represented, USCENTCOM built a system to meet these needs that used "Foreign Military Sales, cross-servicing agreements, and special agreements under the Foreign Assistance Act."¹⁸⁰

Coalition military leaders, in country, who saw a piece of equipment that would fill a certain operational need would report it to the JTF J-4 and other UN leadership in UNOSOM. Accountability of supplies and services provided to the coalition forces, other US Services, and ARFOR were forwarded from the JTFSUPCOM to the JTF J-4. JTF J-4 provided the information to USCENTCOM for FMS coordination or to UNOSOM headquarters for approval. Besides common item supply support, several pieces of US equipment were requested to assist in fulfilling certain coalition

missions. If the UNOSOM agreed, a request to the UN Headquarters in New York City was sent and, if approved, forwarded to FMS for issue.

An example of this type of request in the Belgium contingent's request for US made water purification units. The request for this critical piece of equipment was approved by the UN and forwarded to FMS. The ROWPUs were contracted for and sent to Somalia. Once approved, the 68th CSB received a directive to provide personnel to train several Belgium soldiers in the operational and maintenance aspects of the water purification units. Once the ROWPUs arrived in country, the 68th CSB assisted the Belgium contingent in assembling and operating the units. Even though the training and assistance took time from an already busy schedule, the 68th CSB contributed significantly to the success of another unit within the coalition team.¹⁸¹

Logistics Civilian Augmentation Program

Upon arrival in theater, the MARFOR leadership provided \$18 million to mobilize a contractor in support of critical base support services.¹⁸² The Logistics Civil Augmentation Program (LOGCAP) world-wide contingency contract had been awarded to Brown and Root Services Corporation. The US Army Corps of Engineers Trans-Atlantic Division, Winchester, Virginia awarded the contract.¹³³ The Army managed the LOGCAP program and centralized "contracting

with single sources to streamline the process and reduce response time."¹⁸⁴ Brown and Root had extensive experience working in multinational military environments and had former military officers among their ranks. The military contracted Brown and Root to augment existing service support capability. A critical undertaking for the LOGCAP early in the deployment was the contract for MARFOR that provided 2.5 billion liters of water for the coalition forces. Additional LOGCAP services included: portable toilets, power generation, well drilling, and equipment cleaning.

Conclusion

This chapter presented the case study and analysis of each tactical logistics function. It began by setting the country background of the case study. After the country introduction, the chapter provided an explanation of the mission of Operation Restore Hope. This case study explored the mission's command and control structure including an introduction to the logistics leadership. The difficulties of developing a logistics structure in an austere environment were astounding to most leaders in Somalia. This chapter provides insight to those reading for historical reference or to those authors of emerging training and doctrine. Whether studying the 19th Century or preparing the US Army for the 21st Century, the tactical logistics functions are applicable. Chapters I through IV

provide the reader a wealth of knowledge to assist in determining past, present, and future logistics support to coalition operations.

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CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Support to coalition operations is an interwoven fabric of US Army heritage as pointed out in Chapter Two. From the Quartermaster General's support plans to George Washington's Army in 1775 to the logistics plans laid down for the coalition force in Somalia, several functions never changed. The commander's plan included a logistics element and a leader for success. A coalition of military forces was provided for enhancing the commander's freedom of movement. Key innovative logistics support included: weapons [from musket to machine gun]; ammunition [from cannonball to precision munitions]; food, general supplies, fuel [from hay and oats to petroleum]; personnel, transportation [from horses to HMMVs]; and medicine. Technology has changed but the basics of supporting a military organization has not.

This research captured a historic view of coalition logistics and moved into the humanitarian operation in Somalia. Operation Restore Hope proved a great logistics challenge to thousands of US military personnel. Support to

coalition forces proved difficult in terms of varying degrees of need, capability, and technology. Each coalition partner understood their mission in support of the United Nations; however, many did not arrive in Somalia with operational equipment and supplies required to perform the task. Logisticians at all levels in the Joint Task Force worked together to ensure each soldier was armed, transported, fed, and provided medication and ammunition. Coalition unit leaders were provided briefings, common item logistics support [food, fuel, and water], communications, and transportation. The JTF and USCENTCOM logisticians made every effort possible to design an agreement to provide required and requested [not always the same] supplies and equipment to the coalition partners throughout Operation Restore Hope.

Conclusion

How effective was the US Army logistics support to the coalition forces during Operation Restore Hope using FM 100-5, Operations as the guideline? One would have to conclude the logistics support met the minimum requirements; however, this achievement was accomplished by innovative logistics leaders at all levels in USCENTCOM and in Joint Task Force Somalia and not by any existing doctrine.

What can be concluded from the US Army support to coalition forces in Somalia? Through this research, it is

evident that providing logistics support to the coalition force was in the best interest of the US. Key examples of this evidence included:

(1) US quality control of sanitation, food, water, fuel, and medicine;

(2) US capability to rapidly air and sealift coalition forces, supplies, and equipment;

(3) US port capability to discharge vessels safely and quickly while maintaining accountability;

(4) Centralization of common item supplies' purchase, shipment, storage, and issue provided a cost effective method to provide logistics support;

(5) US nature was to provide assistance to less developed troop contributing nations.

Can the US Army expect taskings from the US President to support coalition operations in the future? Without question the US Army focus is moving in the direction of increased coalition operations. As Chapter One pointed out, US involvement in assuring global peace will inevitably require the US Army's involvement. No other nation has the lift capability to move large quantities of forces from numerous nations to a single location.

Additionally, few countries have the ability to provide quality control inspections supporting large forces in terms of sanitation, food, water, and fuel. For instance, JTF petroleum plans ensured coalition units

received the integrated petroleum, oil, and lubricants support that was required without the large petroleum infrastructure used during Operation Desert Shield/Desert Storm.

The US Army's goal of the future focuses on deterring wars and, if deterrence fails, fighting and winning the nation's land wars. Changes in US Army's roles and missions require modification to existing doctrine. Doctrine in the future must reexamine subordinate doctrine, force design, materiel acquisition, professional education, and individual and unit training."

Recommendations

In outlining the recommendations for logistics support to coalition operations, the research focused on "What should be inferred from the conclusion that needs to be in future doctrine?" As a result of the analysis of the research material and conclusion, logistics support to coalition operations is inclined to improve if recommendations highlighted in this portion of the chapter are taken under deliberation. The tactical logistics functions [manning, arming fueling, fixing, moving, and sustaining the soldier] once again provide a simple, yet solid categorical outline to provide recommendations.

In view of coalition operations in the 1990s, many US Army as well as UN and Joint Publications may require

modification. However, US Army Field Manual 100-5, Operations, will continue to reflect the basic logistics support doctrine to support a rapidly changing global environment. Additionally, FM 100-5 must link the National Military Strategy to US Army's force projection roles and missions. This linkage must support a variety of peoples to include: US citizens, allied and coalition partners, and US sister services.

US logistics support to coalition forces can be improved, but it appears from the research that FM 100-5 need some work in regard to coalition operations. Modifications to existing logistics doctrine for future coalition operations should be taken under review. Those responsible for authoring logistics doctrine need to ask why the US provided the bulk of logistics support to the coalition operations during Operation Restore Hope. Future operations may require different balances of combat, combat support, and combat service support. It may be in the US military's best interest to gain early involvement in the planning issues involved, especially those concerning joint and coalition logistics support functions.

Manning

In future operations the US Army will be tasked to assist in manning coalition operations. It may be in the best interest of the US Army to adopt the survey of

'potential contributing nations method' successfully used by USCENCOM during the planning cycle of Operation Restore Hope.

Logistics' Liaison Training

During this search for coalition partners, a search by the US Army Personnel Command for Foreign Area Officers, linguist, and former Personnel Exchange Program (PEP) officers and noncommissioned officers should be required. Proper utilization of experienced personnel will pay dividends in future operations. Additionally, US Army leaders need to provide logistics personnel opportunities for linguistic training. Ideally, all US Army officers should be proficient in a second language. These types training provide added value in terms of expertise to the supported Commander in Chiefs.

Logistics success in future coalition operations will remain difficult and ad hoc unless an innovative training doctrine is designed. In coordination with the UN and US Army leaders, development of a UN logistics training school is eminent. Curriculum requirements for this school need to include the multinational basics of accountability, receipt, storage, and issue of supplies and equipment. Training of US Army logistics personnel in coalition and allied logistics must occur. US Army leaders should designate logisticians to attend major coalition operation players' [United Kingdom, Canada, Pakistan, India, Germany, Belgium]

staff and war colleges. With future operations likely to include China, Russia, Ukraine, and Japan, exchange of logistics personnel is worthy of consideration and establishment.

Theater Reception Center

In the manning arena, personnel [US and coalition] reception into theater remains critical in the force projection operations of the future. To ensure efficient logistics support and eliminate redundant support, the US Army should develop doctrine to build a theater reception center for US and coalition forces. Using a model similar the US Marine Corps' Coalition Support Team concept, as described in Chapter Two, the US Army could establish this void in doctrine. This theater reception center concept could be combined with the successful US Army morale, welfare, and recreation center used by coalition forces in Somalia. A logistics support system being fielded by the US Army Quartermaster School's Battle Laboratory could be used in the theater reception center design. This system, named Force Provider, could be deployed on coalition operations over 180 days, in base-based operations, or in environments where rotation of units is imminent.

US Army Civilians

Besides US and coalition military force manning requirements, US Army civilians must be factored in the planning process. In future operations the deployment of both US Army civilian [Army Materiel Command] and military elements in coalition logistics support roles must be continued. The success of each logistics supply support function hinges on the balance of timely, accurate support which US Army civilian and military logisticians provide. The US Army Materiel Command's Logistics Support Elements are tailored to meet this objective. The LSEs mix of US Army civilian and military logisticians provided significant support to US and coalition partners in arming, fueling, fixing, moving, and sustaining the force.

Logistics Civil Augmentation Program

With severely limited host nation support available, the supplement of US and coalition military forces by civilian logistics agencies proved beneficial during Operation Restore Hope. These agencies were contracted under the Logistics Civil Augmentation Program (LOGCAP). Future operations should initiate the LOGCAP as soon as possible in a coalition operation. Planners may use the LOGCAP in Somalia as a worst case scenario to determine what level [quantity and quality] may be required in theater. Considerations for the use of LOGCAP include: dependable

civilian personnel, i.e., not flying out of country when the environment is distasteful; limited military protection to civilian personnel; and cost effective support.

Arming

Future US Army force projection operations involving coalition forces may require further use of the US Army Materiel Command's Ammunition Support Teams. This concept provides the potential for arming function's quality control and munitions accountability for all coalitions operations involving US Army personnel. Existing and future doctrine should ensure the proper foundation for use of this valuable asset.

Fixing

The function of fixing the equipment for US and coalition forces in future operations requires reexamination of centralized theater maintenance doctrine. With a single theater maintenance plan, maintenance support teams, Logistics Support Elements, materiel management, and interoperability of equipment could be streamlined to provide cost effective and efficient services. The Logistics Support Element potentially includes the ability to provide an organized logistics structure for all US and coalition activities in coordination with UN and US Department of Defense agencies.

Maintenance, along with Class IX repair parts, should fall under one material and maintenance staff section. It was confusing enough for coalition partners to break the code on simply reading US manuals for unit level maintenance; it became a greater challenge to determine who provides direct support level maintenance and supply support requisitions. One method to centralize maintenance and supply procedures is to link the responsible CINC's J-4 staff with the US Army's Logistics Support Element during the planning cycle. The Logistics Support Element could be tasked to deploy a senior logistics officer or civilian to initiate theater maintenance planning and management until a theater, joint, or UN logistics manager is in theater. Since all coalition partners do not maintain US compatible equipment, future operations may require US support for a UN multinational, multi-functional maintenance team.

Once in the theater, the use of maintenance support teams, supply support of Class IX, and wholesale assistance through Foreign Military Sales, including support from the Logistics Support Elements must be continued. Their rapid response to critical equipment problems alleviated days of downtime, increasing the readiness of US and coalition forces during the operation. Future deployments, training and real-world, of brigade-size units should include forward deployment of Logistics Support Elements. This training may extend efficiency and effectiveness of the logistics system,

in addition to working relationships of US Army civilian agencies and maneuver commanders. The success of these teams in Operation Restore Hope, Hurricane Andrew, and Operation Desert Shield/Desert Storm emphasizes the need to expand working relationships on a routine basis.

Since the US holds a technical advantage with cargo aircraft, future planners must anticipate a greater coalition demand for US helicopters. With the demand of US aviation usage, future logisticians may need to increase quantities of aviation maintenance units, Class IX aviation repair parts, and JP5 fuel when the US is involved in a coalition operation.

Soldiers may require multinational maintenance training with other nations, particularly those countries the US maintains habitual military relationships with, such as Canada, Germany, Italy, Australia, and France. If maintenance cross training proves successful, requirements for maintenance personnel in theater may fall by twenty-five percent or more.

Fueling

The successful centralized bulk fuel forecasting, storage, and distribution operations allowed the US and coalition forces to move throughout Somalia. Without a host nation support infrastructure, the JTF J-4 petroleum office coordinated all US and coalition forces' fuel support from

sources external to Somalia. This use of a single fuel philosophy during this operation proved successful and must be continued.

Initial plans called for use of the Offshore Petroleum Distribution System (OPDS) to provide offshore refueling. Although the OPDS was not used due in part to high sea states, future operations into austere environments may require the integration of OPDS training with US Army petroleum units to preclude misuse or no use of this great capability in supporting US and coalition forces.

When involved in coalition operations overseas, future petroleum planners may need to analyze the use of on-road petroleum tankers in rough terrain areas such as Somalia's harsh environments. Petroleum tankers that are not designed for off-road use and those without an internal baffling system should not consistently deploy to multinational environments where their use is limited. Design of baffles for these petroleum tankers should be researched in support of future US and coalition operations.

Moving

Transportation activities throughout Operation Restore Hope proved ever-changing yet critical to move US and coalition forces and equipment in Somalia. As doctrine for future coalition operations emerge, in-transit visibility and strategic lift of coalition forces' equipment

must be considered. Successful air and sea ports of debarkation for the coalition force revalidated the US Army's use of the 7th Transportation Group, Fort Eustis, Virginia in coalition environments. This unit's training must be interwoven into major deployment activities with coalition forces such as Bright Star, Display Determination, Reforger, and Team Spirit.

In the future, the 7th Transportation Group could provide coalition forces training on port of debarkation requirements. The capabilities of this unit include international terminal services, cargo handling equipment, rail head operations, airfield operations, and seaport operations. To properly utilize the capabilities of the 7th Transportation Group in a multinational environment, early deployment of this unit must be considered in all future doctrine.

All future operations with a large moving mission must consider long range communications for convoys and their command elements, liaison officers, and Joint Force headquarters. US Army leaders should increase the number of single side band, high frequency radios (HF) in transport units to support US and coalition forces in severe environments where long range convoys are not uncommon. Successful operations of the future may depend on this type of communication device.

Sustaining

Sustaining the US and coalition soldiers included personnel services support, health services support, field services support and general supply support. Although these supply and service support functions fall under a singular category, this did not diminish their importance to the success of the overall mission in Somalia. Without logistics planning for sustainment of the soldiers, prolonged logistics support to coalition operations in Somalia would not have been successful. Existing doctrine allowed planners of these functional subcomponents to integrate and synchronize support to the forces.

Health Service Support

Future coalition operations involving health service units should examine the planning and execution of the support provided during Operation Restore Hope. Personnel evacuation, preventive medicine, and all echelons of medical support provided services validating existing doctrine for health service support. Future operations must consider the standards of medical care provided by the coalition forces for their soldiers. Future health service support training during combined and coalition exercises overseas should encourage interoperability training with US military medical procedures and equipment. Planners for future coalition operations should encourage US partners to adopt HIV testing

and preventive inoculations [Yellow Fever, Plague, and Malaria] for soldiers deploying to the theater of operations. Future coalition operations must continue to use US preventive medicine and field sanitation measures as a force multiplier to alleviate the effects of disease and non battle injury.

Field Service Support

The field service support of Mortuary Affairs proved a success to US and coalition forces. Innovative use of a local hospital, US Air Force temper tents, and refrigeration vans provided the US and coalition forces a solid field service of handling remains. Future operations require adding multi-national preparation of remains to US Army doctrine and training. With an enlarged training program [including cultural and religious differences] to handle remains of coalition partners, the capability of future service support to coalitions will be increased.

Another field service support is bakery operations. Even with the creation of pre-packaged bread, future operations should consider deploying a bakery unit to support US and coalition forces in extremely difficult environments such as Somalia.

Water purification, storage, and distribution throughout the operation proved invaluable to the survival and sanitation of the force. Future operations should

continue to provide centralized water support for coalition operations. The deployment of a Water Support Battalion in support of future operations the size of Operation Restore Hope must be considered. These units' training programs should be integrated into deployment activities with coalition forces such as Bright Star, Display Determination, Reforger, and Team Spirit.

General Supply Support

General supply support for future coalition operations will require a centralized theater logistics manager and a central receipt, short-term storage, and issue point. Trial development of a contingent theater logistics team could consist of US Army civilian personnel, US Army military personnel, and coalition or allied partners. Designated logisticians would direct all tactical logistics functions described in this research. Qualified personnel would be selected in the future from Logistics Support Element designees, logistics board officers designated by a table of distribution and allowances (TDA), and logistics officers from established international partners such as Canada. Each position would be carefully designed to match positions presently required by a theater logistics staff.

To maintain the continuity of a contingency theater logistics team, US Army leaders should activate and deploy it annually to train in a Joint Readiness Training Center

coalition force environment. Using emerging computer technologies, US Training and Doctrine Command should contract development of simulation software to ensure training may occur quarterly from remote locations. This concept provides future US and coalition forces a centralized logistics management system which enhances efficiency and eliminates redundant purchases and shipments into an area of operations.

Future US Army doctrine should consider establishing a centralized receipt, storage, and issue point as close to the APOD and SPOD as possible. Major subordinate supply points would be established near the customer units as possible as in present doctrine. Creating a centralized receipt point enhances the concepts of "in-transit visibility" and "real-time information." This concept prevents items sitting at a port holding area for days, sometimes unguarded, then transported several miles to a Supply Support Activity, only to be issued to a unit at the port or elsewhere 10-15 days later. Using the latest automation support technology available will assist in the success of a central receiving and issue point for US and coalition forces.

With the increase in coalition and US Army civilian personnel, the provision of life support systems for these elements must be addressed. In future operations, designated support units must be assigned the responsibility

of providing life support systems to in-bound US (civilian and military) and coalition forces (under US umbrella). A designated sustainment activity must be in place for all personnel who require food, water, shelter, and protection support.

Future coalition operations require US Army trainers to expand cultural awareness training to include food requirements. Basic examples of nation states whose religious prerequisites forbid the intake of certain foods include Israel (no pork, Kosher prepared), Muslim nations (no pork, Halal prepared), and Hindu nations (no beef). US Army Research and Development agencies should continue to develop a universal ration. These agencies should examine the specifics of the French and German rations' popularity among coalition forces, to include what is so unpopular about US rations from a coalition point of view.

The success of Class I water operations was due to the single source management of water in the theater. Centralized management of water should continue in future operations. However, future operations in austere environments require a focus on a problem associated with water. A study should be developed to determine a method to alter the taste of water from a water purification unit due to feedback from US and coalition partners dissatisfied with the taste of this water.

Class I bottled water became the preferred substitute for ROWPU water during the operation. Thousands of liters of bottled water were damaged during the shipment process. Future operations should require a standard in containerization of packaged water for US and coalition forces.

The use of host nation support, when available, must continue (even though it was limited in Somalia). US Army leaders should increase training to Civil Affairs personnel in potential logistics requirements in various regions of the world. This training would include nations of potential coalition partners. Additional requirements for Civil Affairs teams may include training of US and coalition forces in dealing with the general business public when approaching them for storage locations, access to civilian areas, purchase of foods and general supplies, as well as for civilian labor.

Recommendations for Further Study

This research paper examined the six tactical logistics functions as they related to Operation Restore Hope and FM 100-5. Further research into other operations and publications as they relate to the tactical logistics functions is essential. Future study into US Army operations from 1775 to present will benefit emerging doctrine and training, as well as add significance to the

history of the art and science of logistics in coalition operations.

Continued study into Operation Restore Hope may determine joint training and doctrine requirements in support of coalition forces and sister services. Additionally, US joint service education and training requirements in preparation for future operations may be discovered. Also, a study to determine which coalition partners may benefit from training at the US Army's National Training Center and Joint Readiness Training Center should be undertaken. This type of study might determine whether smaller US and coalition training events such as command post and field exercises provide greater benefits than the National Training Center.

A research paper comparing and contrasting the tactical logistics functions used in Vietnam, Desert Storm, and Somalia may provide common denominators in successful supply and service support to operations across a continuum of military operations. This type of research will potentially uncover significant logistics planning and training factors for operations other than war, jungle warfare and desert warfare operations.

Research into the best method of developing a centralized theater logistics management team for on-call real world deployments is necessary. Future operations involving US and coalition forces dictates the formulation

of a centralized logistics management team. This research may examine several possibilities of forming the centralized logistics management team and provide logistics leaders a formal recommendation as a result of the findings.

Research of changes to various logistics manuals, as a result of the 1993 version of FM 100-5, would provide a descriptive finding of manuals outdated for operations other than war and warfighting. Recommendations to update future logistics manuals, in compliance with FM 100-5, would prove beneficial to authors of emerging doctrine and logistics leaders in the field.

Future researchers into coalition logistics may find technological advances in communications such as devices to translate languages as one speaks or writes. Other researchers may discover other aspects in the history of coalition logistics which may stimulate new thinking and lesson learned for the US Army. The next generation of logisticians may find themselves involved in force projected missions with coalition partners on a routine basis. Preparing for the future involves research into the past, comparing the results to the present, and thinking of methods to better logistics support to coalition operations.

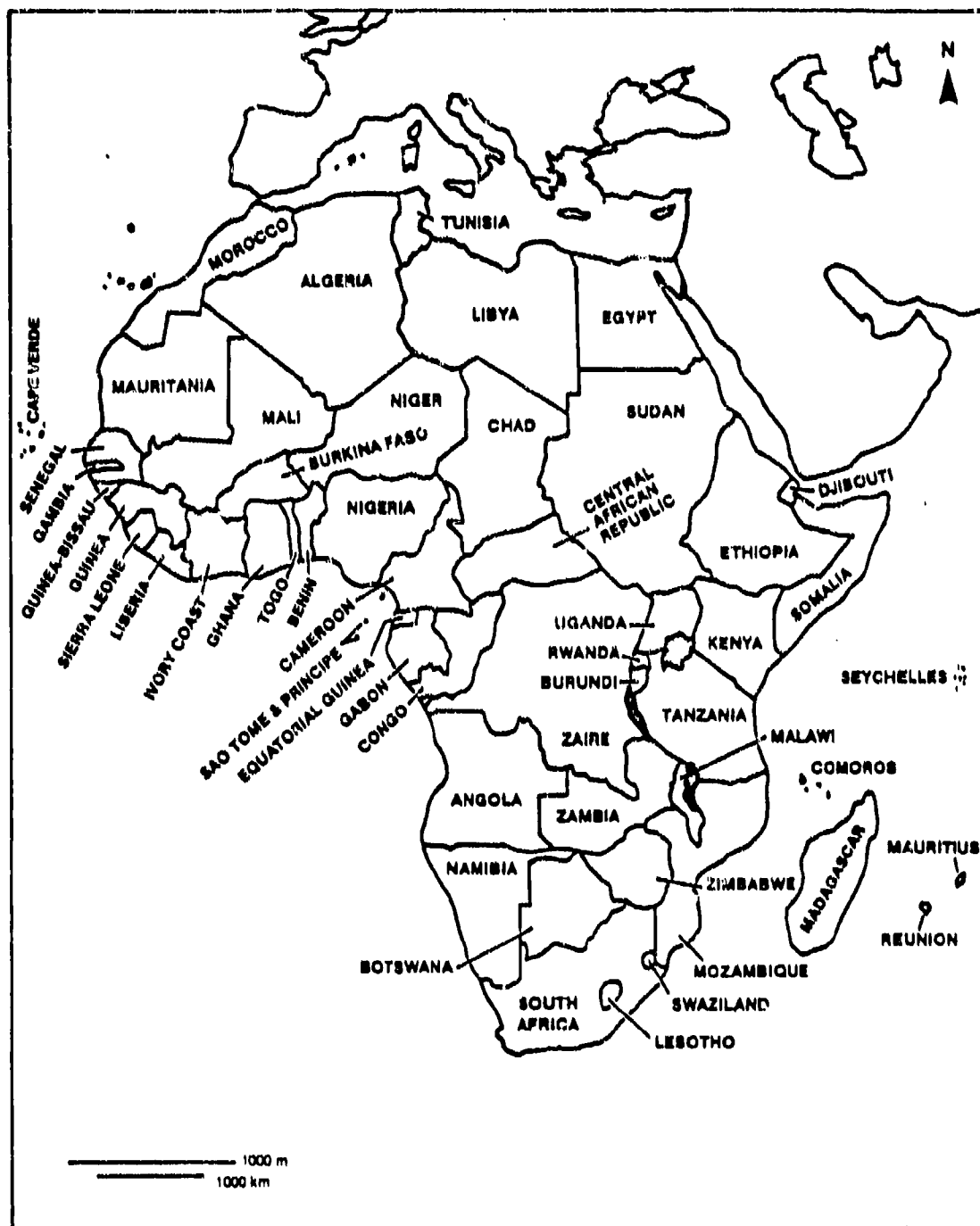


Figure 1
Horn of Africa

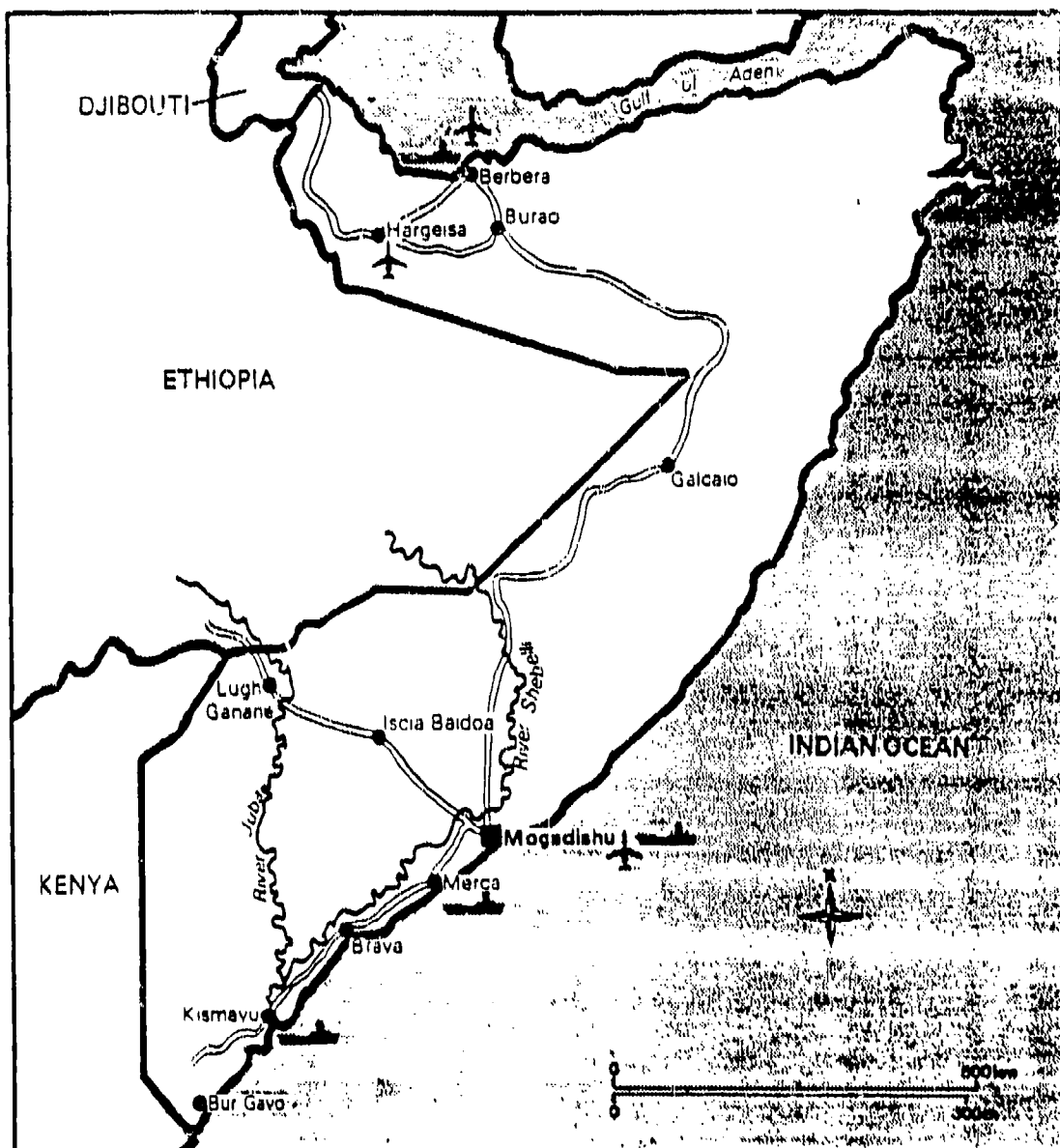


Figure 2
Area Map of Somalia

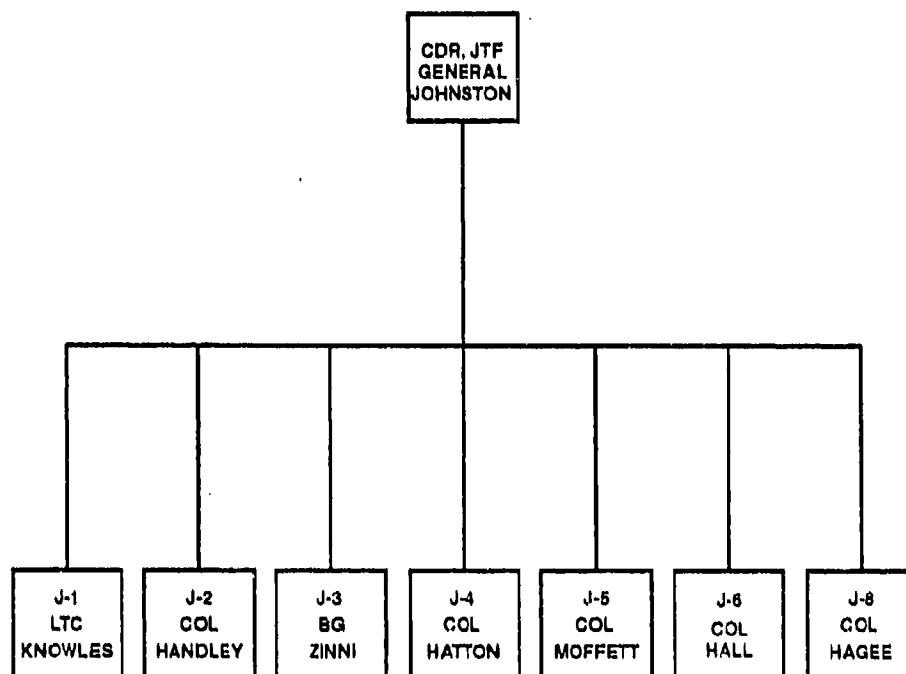


Figure 3
Joint Task Force Somalia

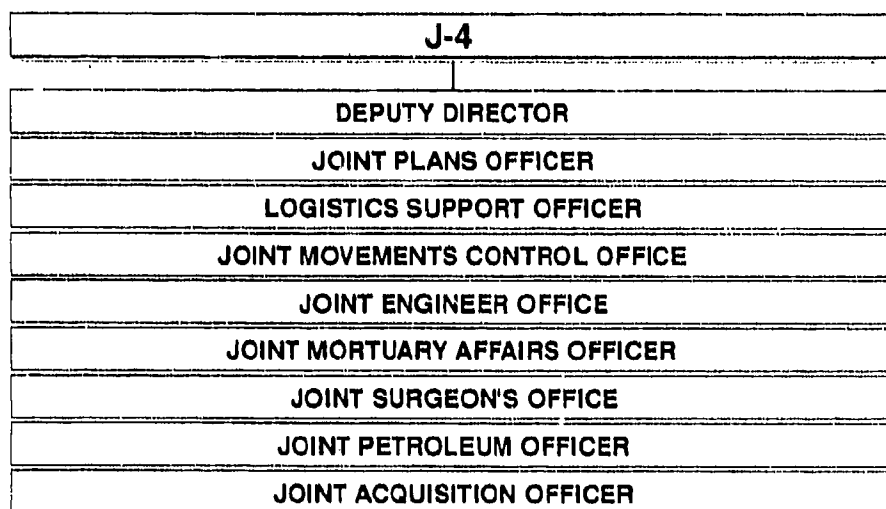


Figure 4
Joint Task Force Somalia J-4 Staff

COUNTRY/ PERSONNEL	LOCATION	SUPPORT AUTH BY
AUSTRALIA 931 INF	BAIDOA	CROSS SERVICE AGREEMENT
BELGIUM 761 ABN	KISMAAYO	CROSS SERVICE AGREEMENT
BOTSWANA 206 INF	KISMAAYO	UN TRUST FUND AGREEMENT
CANADA 1164 MECH INF	BELEDWEYNE MOGADISHU	CROSS SERVICE AGREEMENT
EGYPT 235 MECH INF	AIRFIELD MOGADISHU	UN TRUST FUND AGREEMENT
FRANCE 1578 MECH INF	ODDUR	CROSS SERVICE AGREEMENT
GERMANY 1000 ENG/LOGISTICS	MOMBASSA KENYA	CROSS SERVICE AGREEMENT
GREECE 110 MED/LOGISTICS	WAAJID	UN TRUST FUND AGREEMENT
INDIA 1250 INF/LOGISTICS SPT	BELEDWEYNE	UN TRUST FUND AGREEMENT
ITALY 2558 AIR INF TF IBIS	GIALALASI	CROSS SERVICE AGREEMENT
JORDAN 900 INF	MOGADISHU BALEDOGLE	FOREIGN MILITARY SALES
KUWAIT 138 INF/SPT	AIRFIELD MOGADISHU	FOREIGN MILITARY SALES
MOROCCO 1250 MECH INF	BALEDOGLE MOGADISHU	UN TRUST FUND AGREEMENT
NEW ZEALAND 67 LOGISTICS	MOGADISHU	FOREIGN MILITARY SALES
NIGERIA 565 RECON INF	MOGADISHU BELET UEN	UN TRUST FUND AGREEMENT
NORWAY 78 HQ UNOSOM	MOGADISHU EMBASSY	UN TRUST FUND AGREEMENT
PAKISTAN 4000 INF	MOGADISHU NEW PORT	UN TRUST FUND AGREEMENT
SAUDI ARABIA 680 LIGHT INF	MOGADISHU AIRFIELD	FOREIGN MILITARY SALES
SWEDEN 180 MED	MOGADISHU UNIVERSITY	FOREIGN MILITARY SALES
TUNISIA 133 INF/MED	MOGADISHU UNIVERSITY	UN TRUST FUND AGREEMENT
TURKEY 300 MECH INF	MOGADISHU MARKA	UN TRUST FUND AGREEMENT
UNITED ARAB EMIRATES 640 INF	MOGADISHU NEW PORT	FOREIGN MILITARY SALES
ZIMBABWE 160 INF	MOGADISHU	UN TRUST FUND AGREEMENT
UNIT INFORMATION OBTAINED FROM VARIOUS BRIEFING CHARTS		

Figure 5
Coalition Forces Support Agreements and Location

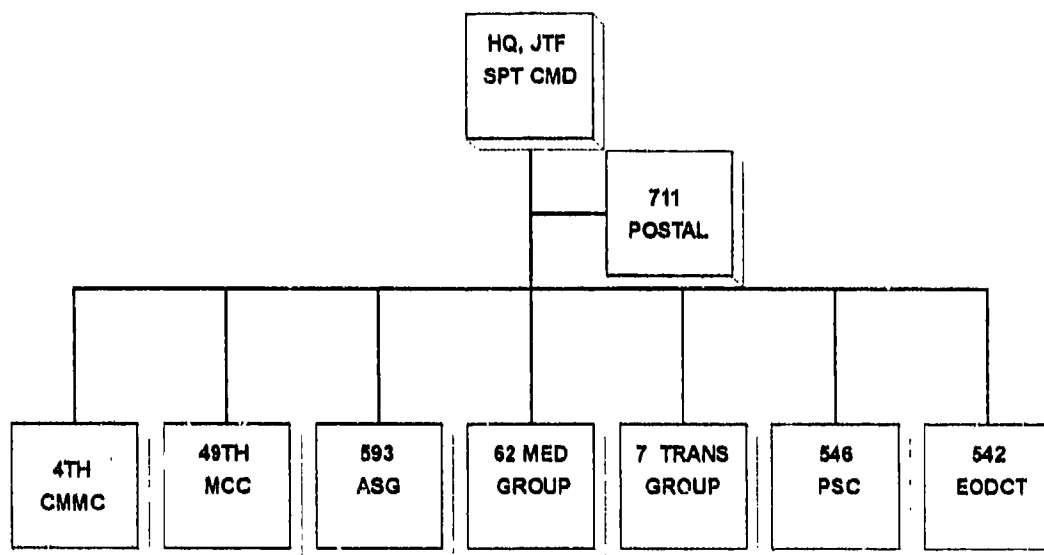


Figure 6
Joint Task Force Support Command

MAN	SUSTAIN			FUEL		FIX		MOVE	
COUNTRY/ PERSONNEL	CLASS I WATER	CLASS I FOOD	ECHELONS MED CARE	CLASS III MOGAS	CLASS III JP5	CLASS IV	CLASS IX	GROUND TRANS	AIR TRANS
AUSTRALIA 931 INF	PTO	D	II PTO	D	D	SS	SS	PTO	D
BELGIUM 761 ABN	D	SS	EVAC D	SS	SS	D			PTO
BOTSWANA 206 INF	D	D	II D	D	D	D	D	SS	D
CANADA 1164 MECH INF	D	SS	II PTO	D	D	SS	SS	ROUTINE SS LINEHAUL D	SS
EGYPT 235 MECH INF	SS	SS	I PTO	SS	SS	D	SS	SS	D
FRANCE 1578 MECH INF	D	SS	III EVAC	D	D	SS	SS	SS	SS
GERMANY 1000 ENG/LOGISTICS	D	SS	II PTO	D	D	D	SS	SS	D
GREECE 110 MED/LOGISTICS	D	D	D	D	D	D	D	D	D
INDIA 1250 INF/LOGISTICS SPT	D	SS	SS	D	D	SS	SS	SS	D
ITALY 2554 AIR INF TF IBIS	PTO	SS	I PTO EVAC	AIRFIELD D OUTER SS	AIRFIELD D OUTER SS	D	SS-MD ECHELON MAINT	PTO	PTO
JORDAN 900	D	D	II EVAC	D	D	SS	D	SS	D
KUWAIT 138 INF/SPT	D	SS	I PTO	D	D	D	D	D	D
MOROCCO 1250 MECH INF	D	SS	II AMB	SS	SS	D	SS	SS	D
NEW ZEALAND 67 LOGISTICS	D	D	II/D	D	D	D	D	D	PTO
NIGERIA 565 RECON INF	D	D	II SS	D	D	D	SS	SS	D
NORWAY 78 HQ UNOSOM	D	D	D	D	D	D	D	D	D
PAKISTAN 4000 INF	SS	SS	SS	SS	SS	SS	SS	SS	D
SAUDI ARABIA 680 LIGHT INF	D	SS	I SS	D	D	D	D	SS	D
SWEDEN 180 MED	D	SS	III PTO	D	D	D	D	SS	D
TUNISIA 133 INF/MED	D	D	I PTO	D	D	D	D	SS	D
TURKEY 300 MECH INF	D	SS	D EVAC	D	D	D	SS	SS	D
UNITED ARAB EMIRATES 640 INF	D	SS	I	D	D	D	SS	SS	SS
ZIMBABWE 160 INF	D	D	I PTO	D	D	D	SS	SS	SS
LEGEND: D - DEPENDENT SS - SELF-SUSTAINING	DISTRO - DISTRIBUTION LEVELS OF MED - I, II, OR III			EVAC - EVACUATION ABN - AIRBORNE INF - INFANTRY		MAINT - MAINTENANCE PTO - PROVIDE TO OTHERS			

Figure 7
Coalition Support Requirements Per The Tactical Logistics Functions

TACTICAL LOGISTICS FUNCTIONS			AREA OF SUPPORT				
			MOGADISHU	BALEDOGLE	BAIDOA	KISMAAY O JIBIL	BARDERA
MAN	TOTAL FORCES (24,633)		17,500	3,252	1,363	1,643	875
ARM	LEVEL OF CLASS V SUPPORT		DS/GS	DS	DS	DS	DS
MOVE	APOD, SPOD, OR ALOC		APOD SPOD	ALOC	ALOC	SPOD ALOC	ALOC
	TRANSPORTATION SERVICES		LINE HAUL	LOCAL HAUL	LOCAL HAUL	LOCAL HAUL	LOCAL HAUL
FIX	CLASS IV CONSTRUCTION		YES	YES	YES	YES	YES
	MAINT SUPPORT		AMC/LSE MAINT CO	MST LSE	MAINT CO (-) LSE	MAINT CO (-) LSE	MST LSE
FUEL	CLASS III CAPACITY (GAL)		1850 K	380 K	120 K	63 K	28.5 K
SUSTAIN THE SOLDIER	HEALTH SERVICE SUPPORT	ECHELONS OF MEDICAL CARE	LEVEL I-III	LEVEL I-II	LEVEL I	LEVEL I-II	LEVEL I
		MEDICAL EVACUATION	YES	YES	ON CALL	YES	ON CALL
	FIELD SERVICE SUPPORT	LAUNDRY UNITS	YES	YES	YES	YES	NO
		WATER CAP STOCK OBJ (GAL)	125 K	163 K	145 K	40 K	56 K
		MORTUARY AFFAIRS	YES	NO	NO	NO	NO
	GENERAL SUPPLY SUPPORT (7 DAYS OF SUPPLY)	WATER (BOTTLED) STOCKAGE OBJECTIVE	252 K	36.4 K	22.4 K	21 K	98 K
		CLASS I MRE STOCKAGE OBJECTIVE (MEALS)	825 K	36.4 K	22.4 K	21 K	98 K
		CLASS I T-RATION STOCKAGE OBJECTIVE (MEALS)	412.5 K	18.7 K	11.2 K	10.5 K	49 K
	LEGEND:						
ALOC = AIR LINE OF COMMUNICATIONS			GS = GENERAL SUPPORT				
APOD = AIR PORT OF DEBARKATION			DS = DIRECT SUPPORT				
SPOD = SEA PORT OF DEBARKATION			EVAC = EVACUATION				
TRANS = TRANSPORTATION			OBJ = OBJECTIVE				
LSE = LOGISTICS SUPPORT ELEMENT			SVC = SERVICES				
MST = MAINTENANCE SUPPORT TEAM			SPT = SUPPORT				
CO = COMPANY			CAP = CAPACITY				

FIGURE 8
Coalition Forces Logistics Capabilities

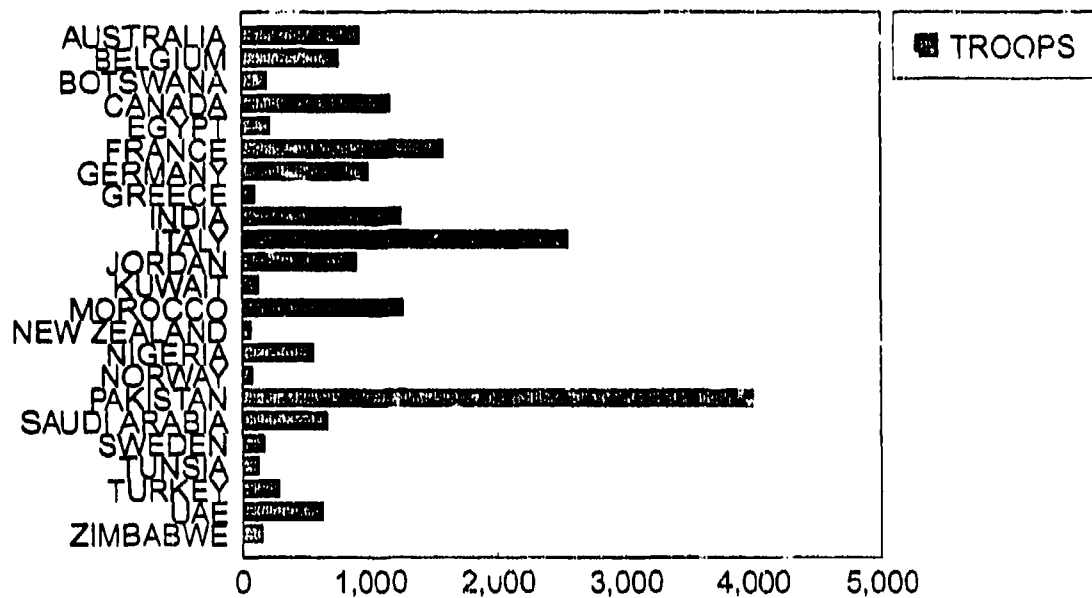


Figure 9
Coalition Forces in Somalia, 23 March 1993

UNITS	START	KIA	WIA	MIA	DNBI	LOSSES	GAINS	TOTAL	PROJECT END
HQ									
JTF SUPCOM									
546 PSC									
49 MCC									
4 MMC									
USAMCOM									
7 TRANS GP									
593 ASG									
62 MED GP									
10 MTN SIG									
10 MTN MP									
SWEDISH HOSPITAL									
TUNISIA									
TOTAL									

Figure 10
Joint Task Force Support Command Personnel Status Chart

COALITION PARTNER	C-5	C141
BELGIUM	14	6
BOTSWANA	5	0
CANADA	5	5
FRANCE	15	0
NIGERIA	13	0
PAKISTAN	19	7
SWEDEN	7	0
TUNISIA	0	3
ZIMBABWE	2	1
TOTAL	80	22

Figure 11
Coalition Airlift Support, United States Air Force
5 December 1992 through 4 May 1993

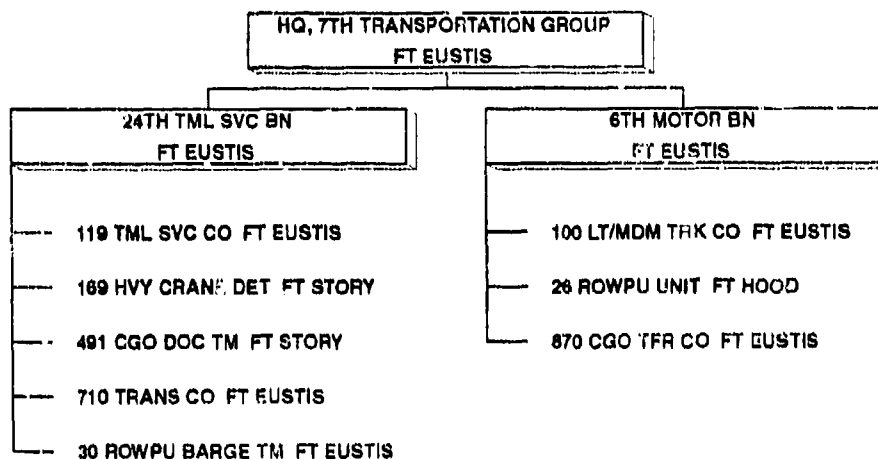


Figure 12
7th Transportation Group in Somalia

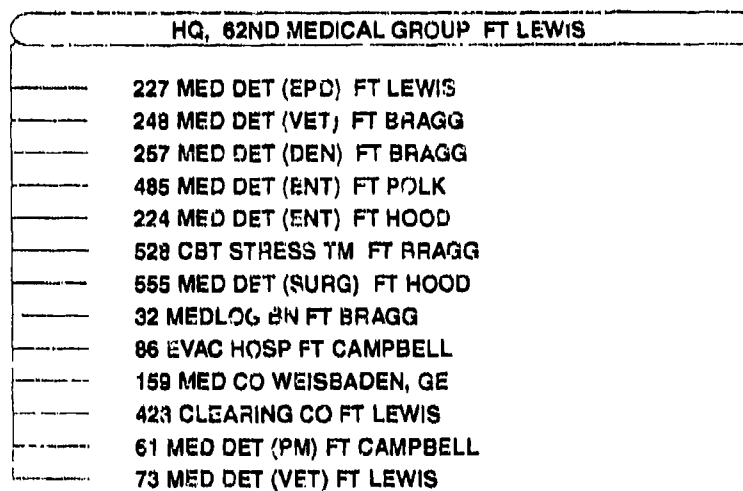


Figure 13
62nd Medical Group in Somalia

ECHELONS OF MEDICAL CARE				
ECHELONS OF MEDICAL CARE	LOCATION	TYPE OF CARE	PERSONNEL PROVIDING CARE	
LEVEL I	POINT OF INJURY IN UNIT AREA	FIRST AID DISEASE NON-BATTLE INJURY COMBAT STRESS CONTROL PREVENTIVE MEASURES CASUALTY COLLECTION EVACUATION TO SUPPORTING MEDICAL TREATMENTS (AID STATION)	SELF AID OR BUDDY AID COMBAT LIFESAVER COMBAT MEDIC (AIDMAN) PHYSICIAN AND ASSISTANT IN AID STATION	
LEVEL II	CLEARING STATIONS WITH UNITS	EVACUATE PATIENTS FROM ECHELON I PROVIDES ECHELON I CARE DENTAL, LAB, AND X-RAY PATIENT HOLDING (40 BEDS) [PATIENTS RTD 24 TO 72 HOURS]	AREA SUPPORT SECTION * TREATMENT SQUAD * AREA SUPPORT SQUAD * PATIENT HOLDING SQUAD	
LEVEL III	MOGADISHU AND FIELD HOSPITALS	EVACUATES PATIENTS FROM SUPPORTED UNITS PROVIDES ECHELON I AND II CARE PROVIDES SUPPORT ON AN AREA BASIS MASH OR CSH SURGERY ANESTHESIA AVAILABLE	MOBILE ARMY SURGICAL HOSPITAL CORPS SUPPORT HOSPITALS COALITION FIELD HOSPITALS	
LEVEL IV	2nd GENERAL HOSPITAL, LANDSTUL, GERMANY	PROVIDES ECHELON I THROUGH III CARE GENERAL AND SPECIALIZED SURGICAL CARE STABILIZES PATIENTS RETURNING HOME	FULLY STAFFED AND EQUIPPED HOSPITAL	
LEVEL V	CONUS	MOST DEFINITIVE CARE AVAILABLE IN US ARMY MEDICAL SYSTEM FINAL LEVEL OF HEALTH SERVICE SUPPORT	MOST EXPLICITLY STAFFED AND EQUIPPED HOSPITAL	
FIELD MANUAL 8-10, HEALTH SERVICE SUPPORT IN A THEATER OF OPERATIONS				

Figure 14
Health Service Support Echelons of Care

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